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BISMUTH PASTE INJECTIONS IN NASAL ACCESSORY SINUS DISEASES.

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I have seen such remarkable results from the use of bismuth paste in chronic suppurative conditions by orthopedic and general surgeons, that I thought I would see what could be done with it on the ears and nasal accessory sinuses. Bismuth paste in the formula that I employ is the same as that used in general surgery, particularly in orthopedic work. The reports of results from its use by many clinicians in this country as well as abroad are uniformly good. I may say marvelous, when I have seen case after case of chronic empyema of the pleural cavity that has resisted all sorts of treatment, including Estlander's operation, etc., heal in a month's time. One case I have in mind that had lasted thirty years healed by bismuth injection in less than two months. Chronic tuberculous fistulae of bony and soft structural variety of the body heal remarkably rapidly and remain healed after bismuth injection.

Such results must appeal to any rhinologist who has to deal with chronic suppuration of the nasal accessory sinuses, and from analogy we should expect equally good results from the use of bismuth paste in these localities as the general surgeon obtains in the manifold condition he treats. Does he obtain such good results? In order to answer this question, in fact to discuss the value of bismuth paste in nasal accessory sinuses properly, it is necessary that I briefly recapitulate the anatomic, physiologic and pathological conditions so far as they are related to the use of this remedy.

Anatomical Points.—The sinuses are stiff-walled, non-distensible or -collapsible, frequently bisected, and some multicellular. They are lined by a modified mucous membrane. The natural openings leading into them are distant from the exterior and require a specialist, at least one familiar with reflected light and sounding of these cavities, to enter them.

Physiological Points.—Such function as has been ascribed to the sinuses, as the sense of smell, resonation to the voice, regulation of moisture and warmth of the inspired air, their causing the head to be less massive than if the bones were solid, are to be borne in mind when one considers that the cavities are filled with a semi-solid substance which remains for some time in them. The absorptive function of the modified mucous membrane will also have to be considered, because when the bismuth paste remains as long located in these cavities, there should be some sign of absorption.

Pathological Points.—When chronic suppuration exists in the nasal accessory sinuses then their lining membrane undergoes frequently a myxomatous degeneration, and not infrequently is there a superficial osteitis, necrosis and sequestration with its accompanying granulations.

These anatomical and pathological conditions will answer the question why the results can never be as brilliant in the treatment of nasal accessory sinuses as elsewhere in the body where such conditions do not exist. Besides, the technic is somewhat tedious and difficult. It further requires a correct diagnosis before injection; therefore, this treatment is practically only within the scope of a specialist.

In March, 1908, I presented my first contribution on this subject before the Chicago Medical Society. In this I reported 319 cases treated by bismuth paste. These were all sorts of pathological conditions of the nose, throat and ear, and represented it at the time in order to stimulate others to the experimental part of my work. I preconclusion, because not time enough had elapsed for me to do so. Since that time I have made several reports, the last one about two months ago before the Southern Section of the A. L. R. and O., and I can do no better than to repeat what I have stated there.

Remedy.

Formulae: *Bismuth Paste No. 1.*

Bismuth subnitrate	33 parts.
Yellow vaseline	67 parts.

Bismuth Paste No. 2.

Bismuth subnitrate	30 parts,
Yellow vaseline	60 "
White wax	5 "
Paraffin, 120° F	5 "

These two formulas are the only ones that I am employing at the present time, and in describing the various conditions I shall state where one and where the other is used. I may say that as a gen-

eral proposition wherever the paste can be retained, that is, wherever the openings and counteropenings are not too large, paste No. 1 is employed. The reason for that is that it need not be heated, therefore it is always ready for use, and is more easily dislodged when necessary. But in cases in which one desires to have the paste remain or act as a framework, then No. 2 is employed. This latter must first be heated by placing the syringe in hot water for ten to fifteen minutes.

Technic.

The patient is placed in the semirecumbent position. The canulae (usually flexible silver) are passed into the respective sinuses either through their natural or an artificial opening, the syringe by its slip bayonet joint is attached to the canula, and by compressing the handles the paste is forced into the sinuses. The use of cocain or adrenalin is at times advisable when the channels are small and very sensitive. This whole procedure is carried out under inspection, and when the sinus is filled one will see the escape of the paste along the canula. If the channel is unusually large, or if other openings exist as, for instance, in a previously operated antrum, then it is necessary to pack cotton about these openings to prevent the easy escape of the paste before the cavity is thoroughly filled. It is the thorough filling to distension that that will give the best results.

Special Technic.

Antrum of Highmore.—This cavity must be filled according to the conditions present. Many of the cases have undergone some sort of an operation which necessitate a modified technic. If, for instance, a patient has had the middle turbinate removed, perhaps also the anterior part of the inferior turbinate, and there is a large opening in the inferior meatus, then the paste will not remain in such a cavity longer than a few moments; it will be dislodged as soon as the patient walks and blows his nose. In such cases I frequently employ the formula No. 2, which allows its retention for a much longer period. It is best in such cases to put the patient's head on the side while filling the antrum.

Another condition one frequently encounters is an opening in the alveolar process or canine fossa. In these cases the antrum is injected by simply placing the syringe against the external opening, previously packing the nostril, until the paste returns along the syringe points. After the injection it is well to block this external opening by a special constructed semisolid rubber plug in the form of a partial dental plate to prevent the escape of the paste. In cases in which there has been no surgical interference and it is impossible to pass the canula through the natural opening, I have frequently used a trocar which is especially constructed to fit the slip bayonet joint of the syringe, entered through the inferior meatus as one does in puncturing the antrum, and filled the cavity to distension, care being taken that the middle meatus is blocked with cotton before injecting.

Frontal Sinus.—In cases in which I have failed to get the bismuth into the frontal sinus through the natural opening as shown by radiographs there was either a large ethmoid cell in the way, or for this or some other reason, I have done the following: Under local anesthesia a small opening is made in the skin and periosteum overlying the frontal sinus, preferably in the eyebrow. A small opening is now made by means of a gouge or drill into the bone until the sinus is opened into the nose. The nasal cavity having previously been packed, the sinus is then injected to its fullest limit and the small incision is closed. In these cases the formula No. 2 is employed. The nasal packing in this, as in all other cases, is removed right after injection.

Ethmoidal Cells.—These are, of course, not treated by this method, since we are unable to inject the individual cell. I wish, however, to speak of a method of dressing following middle turbinectomy and ethmoidal exenteration by means of the bismuth paste. As soon as the operation is completed and the primary bleeding has ceased, I instruct the patient to close the post-nasal space by pronouncing rapidly and forcibly the word "*kick*." While he does that I employ the blunt end of the syringe and fill the nasal cavity to distension. In these cases I use bismuth paste No. 2 in a fairly solid form, that is to say, only heated so that it can be forced out of the syringe. The patient is not allowed to walk from the operating room, and care is taken that the paste remains in the nostril. Since employing this dressing I have had scarcely any bleeding, infection or reaction following this operation, and practically no after-treatment is necessary. On the following day the patient is instructed to blow out the paste, if he has not already done so during the night. One then finds in the attic of the nose blood clot mixed with paste, which served as an excellent dressing to prevent adhesion and decomposition of secretions. There is no washing or mopping necessary as a rule. In this connection permit me to speak of a point that is very much misunderstood, namely, the effect the paste has on blocking or draining a cavity. Ochsner, of Chicago, has made a number of experiments along this line and finds that the drainage is

very much facilitated by a bismuth paste plug. The secretions pass between the walls of the cavity and the plug. In no case have I ever had any symptoms of retention following the use of the paste. I have seen it, however, in cases of empyema of the chest and other cavities, and in such cases it was very easy to relieve the retention by suction and eventual irrigation by means of warm sterile olive oil.

Sphenoid Sinus.—This cavity is the most difficult to treat, not because it is hard to reach, but because the anatomic formation prevents the paste from remaining unless it be one of the deep sinuses with a very large anterior wall. At the same time, I will say that bismuth paste will remain longer in contact with the infected surfaces, especially if No. 2 is used, than any other means of local application.

Fig. I.—Frontal sinus injected with bismuth paste No. 2 by nasal route. Portion of bismuth paste in the ethmoid region and antrum.

RADICAL OBLITERATION OF THE FRONTAL SINUS AND ANTRUM BY THE AID OF BISMUTH PASTE.

Antrum.—About three years ago I presented before the Chicago Laryngological Society a case of dentigerous cyst that failed to heal by means of treatment until I employed the Mosetig-Moerhof plug. At that time I also made a preliminary report of three cases of antrum suppuration upon which I operated and used bismuth paste, obtaining good results. I took away the entire anterior wall of the superior maxilla, well back under the malar bone, and as much as possible of the lateral wall of the nose or internal wall of the antrum without going through into the nasal cavity. Both these procedures are well established methods. Thoroughly, very thoroughly indeed, is the mucous membrane removed from the cavity and the bone gently curetted so that it may easily granulate. By means of the little finger in the nose one now pushes the lateral wall inwards into the antrum, and the nose is firmly packed. This procedure is for the purpose of making a smaller antral cavity for obliteration. The antrum is now filled with long strips of gauze that have been impregnated with bismuth paste No. 1, and drained through the gingival margin. The remainder of the incision is sutured. Compression is also made over the cheek by a compression bandage in order to help the obliteration of the cavity from the anterior wall. On the next day the gauze is removed from the antrum and replaced with bismuth paste No. 2. The nasal packing is now removed, and no drainage placed into the antrum. If some of the paste has escaped on the next day, then it is reinjected with No. 2 before the opening closes. Compression is kept up over the cheek for several days. I have had these cases *X*-rayed from time to time and watched the rapid absorption of the paste as compared to the slow absorption in cases where the mucous membrane was removed. Nor have I

ever had a case of bismuth poisoning in my practice, although I have seen them in the cases of general surgeons where large amounts of bismuth subnitrates are pent up for a long period of time in cavities not lined by mucous membrane.

I am able to report eleven cases of chronic antrum suppuration treated by the above method with the very best results. Some of them are combination cases, that is, the other sinuses were also involved and operated upon, and I shall mention them in connection with the frontal sinus procedure.

Frontal Sinus.—It has been my object to cure chronic suppuration of the frontal sinus without having to sacrifice the bony anterior wall, and for that reason I have devised or modified an osteoplastic operation (read before the A. M. A. in 1908). I have found, however, that in the percentage of cases so operated upon, the trouble recurred and they had to be reoperated on by a more radical method. In three of these cases, and four that had not as yet been operated on externally, I employed the following procedure with results satisfactory up to the present time. Having a perfect radiograph of the sinus, I make an incision through the eyebrow on to the bone, retract and open into the sinus, thoroughly curetting it of all its mucous membrane, and seeing that the opening into the nose is established through the nasal frontal duct. The nose is packed temporarily, and the frontal sinus is filled with paste No. 2. The incision closes without drainage. In case the sinus does not cease

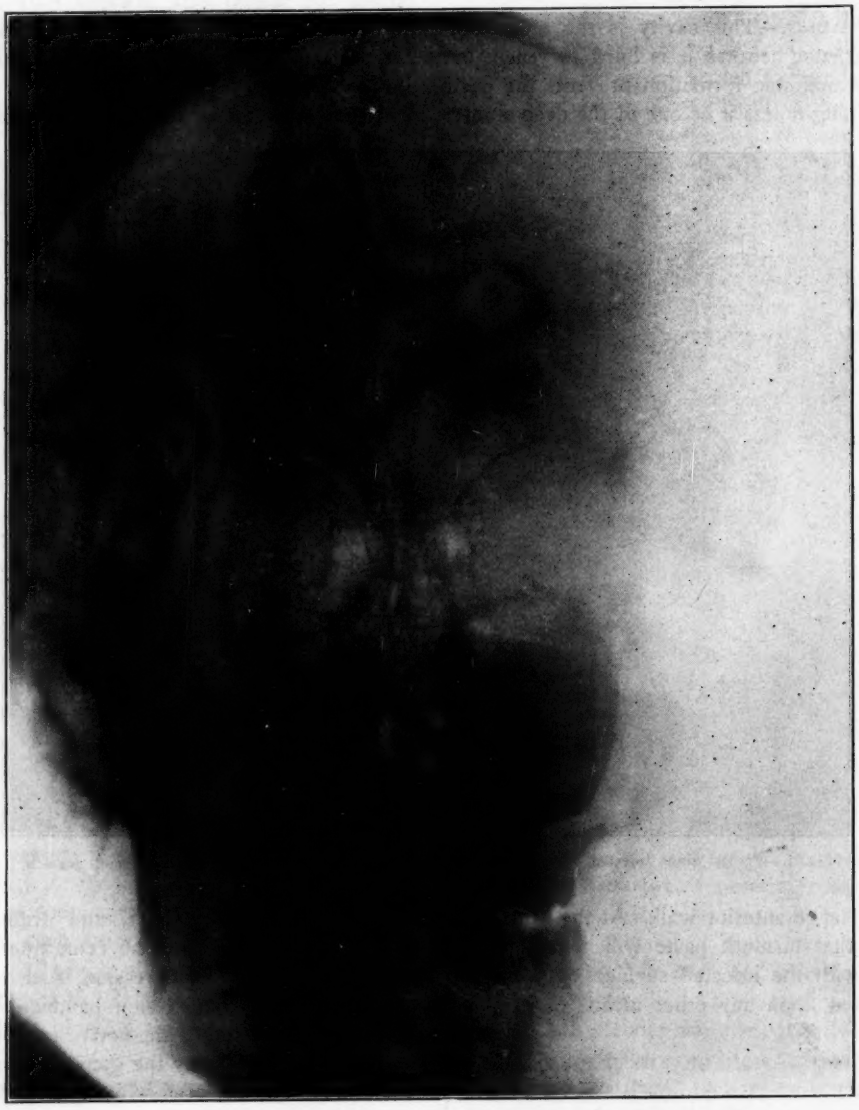

Fig. II.—Antrum filled with paste No. 2, after radical operation.

suppurating then subsequent injections are made through the nasal frontal duct as described in the early part of the paper. In one case of a very large frontal sinus, that is, large antero-posteriorly, I removed considerable part of the bony wall so as to obtain more rapid obliteration by far less deformity than would have been obtained in case a radical Killian operation would have been performed.

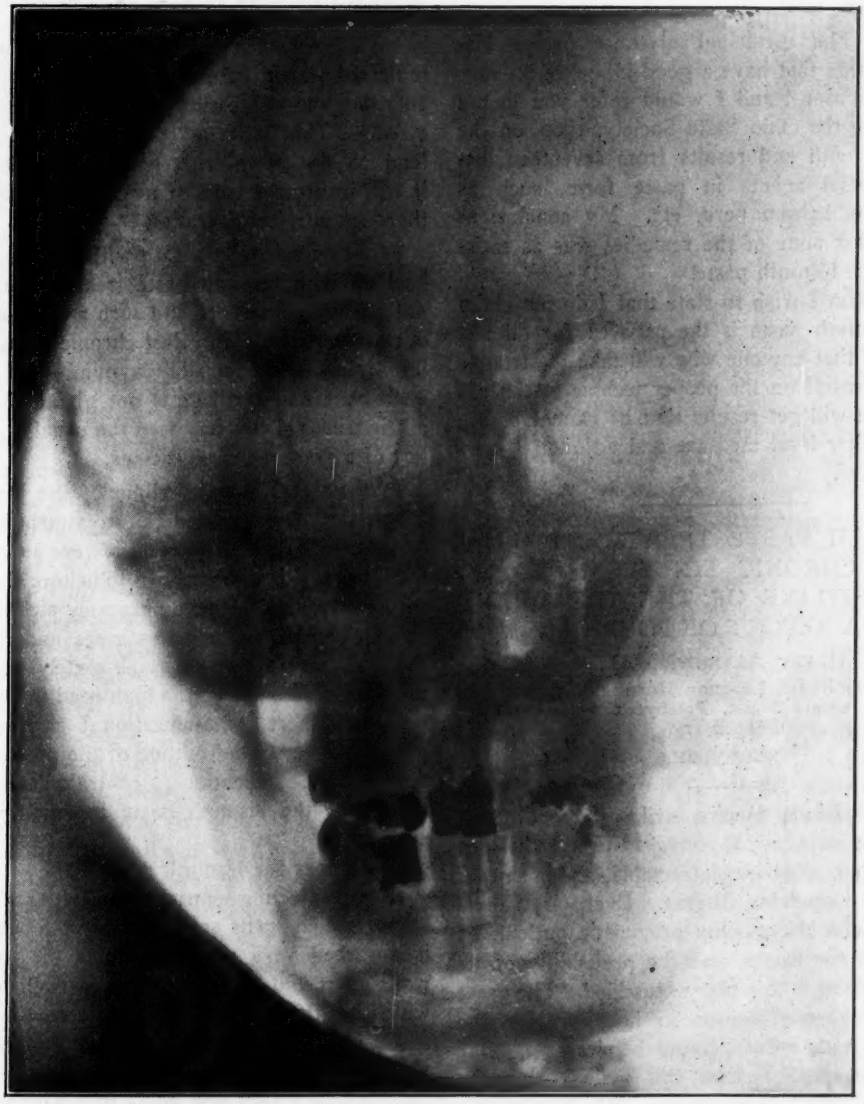

Fig. III.—Antrum injected by nasal route without previously removing the mucous membrane. This radiograph taken 6 months after injection. Some paste in left antrum and nasal cavity.

The obliteration of bony cavities is, of course, nothing new, and since Mosetig-Moerhof introduced his wax plug, many good results have been reported by general surgeons. In the nasal accessory sinuses this is comparatively new, that is, where an intermediary substance is employed to aid rapid healing and prevent deformity. Cittelli's experiments on animals and sebsequently operations on man in filling the frontal sinus by means of the Moerhof plug, are of recent development, and from his report they appear to be of considerable value.

What are the specific actions of the bismuth in chronic suppuration, especially in nasal accessory cavities?

1. It has been positively proven that within the body bismuth paste acts as a chemotactic and bactericide.

2. By its semi-solid consistency it acts as a sus-

tentacular framework, so that granulation can more easily bridge over and obliterate a cavity. By its presence it will prevent the accumulation of secretions and reinfection.

3. Any channel or cavity which is devoid of epithelium and collapsible, stiff-walled, but not too large, will become obliterated by the large and healthy granulations which are characteristic of bismuth paste.

There are other medicinal substances besides bismuth subnitrate that have a good influence on suppurative conditions, and I would refer you to my report before the Ohio State Society, 1909, on the experiments with and results from seventeen different remedial agents in paste form, such as crede, iodine, balsam peru, etc. My conclusions then were that none of the remedies was as satisfactory as the bismuth paste.

In conclusion I wish to state that I do not claim that the bismuth paste is the panacea for all ills, but I do say that any one who will take the trouble to inform himself on the proper technic in the use of this paste will get results that he cannot obtain from any other local measure and adjunct to surgical measures.

BISMUTH PASTE TREATMENT OF CHRONIC SINUSES.* BY AN OUTLINE OF THE TREATMENT WITH A REPORT OF FOUR CASES.

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The word fistula always strikes terror to the hearts of the patients. It conveys to them the idea of a prolonged, stubborn, intractable, and in a great many cases, inoperable disease. Every layman is acquainted with the gloomy prognostic outlook of an operation for fistula, and the probability of its recurrence. Nor is this fear unjustified. The great number of chronic sinuses in hospitals for the crippled is a mute witness to our helplessness. Our two main weapons against this malady—hygiene and surgery—are both deficient. The first is prolonged and indefinite, the last unreliable.

To the Drs. Beck of Chicago we owe the discovery of a remedy that will cure the great majority of these cases. About three years ago Dr. E. G. Beck injected a bismuth-in-vaseline paste into the sinuses of a tuberculous cervical adenitis in a young girl, for the purpose of getting a clear radiographic picture of the sinuses. To Dr. Beck's great surprise the sinuses closed for the first time in two years and remained closed. This suggested to him the employment of bismuth paste as a therapeutic agent, with the remarkable results that he has since published.

The technic of this injection is so simple, the material so cheap, and the operation so devoid of danger that every physician can safely employ it in his office and I feel that every case where it is indicated should have the benefit of a proper trial. In using the expression "a remedy," I did so advisedly. This is not a "cure all." It does not pretend to do away with operative treatment, but it will insure the cure of nearly every case after a thorough surgical operation.

While occasionally a case with a sequestrum will heal up with bismuth paste treatment alone, it is not a usual occurrence and such an outcome should not be expected. To inject chronic sinuses leading into joints with probably a number of pieces of dead bone and cartilage is not giving the measure a fair trial, yet this has been the usual discouraging test of a great many physicians.

In a general surgical clinic of the Presbyterian Dispensary, I have tried this treatment in a series of selected cases. The results were so remarkable that at first I was disinclined to believe the evidence of my own eyes. I have purposely picked the most chronic apparently hopeless cases and, behold, by the first injection one was absolutely cured, while the others were put on the high road to recovery.

In this short communication I shall attempt to give but a very brief outline of the probable action, the technic, indications, contraindications, and results of the bismuth paste injection in chronic sinuses.

What does the bismuth paste do?

1. By injecting sinuses and cavities with a substance which turns solid at body temperature and is absorbed very slowly it holds the granulating walls apart and provides a sort of trellis work into which healthy granulations can burrow and spread.

2. Both laboratory and clinical experience have shown that bismuth has a marked bactericidal action. This also holds true with the bacillus tuberculosis.

3. After the injection of the paste there is marked exudation of polynuclear leucocytes to the neighborhood of the sinuses. This seems to show that bismuth has some chemotactic action on the white blood cells.

TECHNIC.

There are four combinations in use.

* Read before the Lebanon Hospital Alumni Society, May 3, 1910.

PASTE NO. 1.

Bismuth subnitrate	33%
White vaseline	67%

PASTE NO 2.

Bismuth	30%
Vaseline	60%
White wax	5%
Paraffine 120° F	5%

PASTE NO. 3.

Bismuth	30%
Vaseline	50%
Paraffine	10%
Wax	10%

PASTE NO. 4.

Bismuth	30%
Vaseline	45%
Paraffine	25%
Wax	10%

Paste No. 1 is the most frequently used, the others being employed in cases where a more solid consistency is required.

Injection. No general preparation of the patient is necessary. The injection is not at all painful. The area around the sinus is cleaned and dried, and if possible the sinus is wiped dry by a gauze packing perhaps with the aid of a little alcohol. The paste is put into a dry sterile vessel and sterilized by heating in boiling water, care being taken to prevent the water from mixing with the paste. It is well to have a dry sterile glass rod at hand to stir the mixture should the bismuth settle to the bottom of the vessel. A large blunt pointed glass syringe is sterilized by dry heat. If this cannot be done it may be sterilized by boiling and the water extracted by immersing the syringe in alcohol. If there is an asbestos packing to the piston it should be moistened with sterile oil before using.

Having filled the syringe with the melted sterile paste (not too hot) the point of the syringe is snugly applied to the mouth of the sinus and the mixture is injected with sufficient force to distend and penetrate all the sinuses. The patient will usually feel the pressure if the sinuses are sufficiently distended. I usually hold the syringe against the sinus for a short time after the above has been accomplished, exercising a little pressure on the piston all the while. This continued pressure insinuates the paste into the further recesses of the sinus and also prolongs the operation sufficiently to give the paste time to solidify, so that it does not escape in a gush on the removal of the syringe. A piece of gauze is quickly applied and held until the paste becomes solid. A bandage or piece of adhesive plaster holds the gauze in place so that it may absorb the escaping paste and serous exudate. Should there be a number of communicating sinuses all except the one injected are plugged with gauze to prevent the escape of paste.

How much should be injected?

As a number of cases of nitrite poisoning have been reported, cases where large quantities have been injected should be watched carefully. One hundred grains of bismuth may be given at one injection with safety. Children and old people are more susceptible. As the nitrates are usually liberated by bacterial action the location of the sinus and the character of the infection will have great bearing on the toxicity of the drug. Thus injections around the anus and rectum are more dangerous than in other parts of the body; mixed infections are more apt to cause poisoning than those of purely tuberculous origin.

It is not necessary to fill a large cavity to obtain good results. Therefore in very large cavities one may inject bismuth subnitrate paste 100 gms. at a time or use the bismuth subcarbonate instead. Should symptoms of poisoning arise the cavity may be filled with warm sterile oil, as advised by Beck, and the oil removed by some form of suction apparatus. It is well to have the patient radiographed immediately after the injection. It gives a good picture for future comparison and also renders the bismuth radio-active.

COURSE.

Usually after the first injection there will be a marked change in the character of the discharge. A profuse foul-smelling, purulent discharge will be converted into a scanty sweet-smelling serous exudate. Some of the paste will also be found on the dressing. Most of the favorable cases will close after about a half dozen injections. Some cases will continue discharging a slight amount of serum for months but will close eventually. A small number of cases will show little or no results. A number of apparent "failures" will be found due to a retention of some foreign body, a sequestrum, or faulty technic.

PROGNOSIS.

If the discharge diminishes and changes its character from purulent to serous the prognosis is favorable. Should the *X*-ray show a sequestrum, or should the discharge remain purulent and profuse the prognosis is not so promising. The chronicity and duration of a disease seems to have no effect on the prognosis. Tuberculous sinuses respond more

favorably than those of non-tuberculous or mixed variety.

METHOD OF TREATMENT.

At least a week should elapse between the first and second injection. During this time the local and systemic results may be carefully noted. In large cavities, especially cavities with rigid walls, the patient should be carefully watched for collections of pus and subsequent toxemia. Should there be a marked sense of pressure or a temperature of 101° or over, it is advisable to open the paste plug in the sinus and search for a pocket of pus. The frequency of the injections will depend entirely on the progress of the case and the intervals may vary from a few days to a month. An apparent escape of all the paste with a beginning reversion to a sero-purulent discharge should be immediately treated by a fresh injection. A number of cases will close up after the first injection. The formation of a fistula may often be prevented by the injection of a 10% bismuth paste into the cavity of a cold abscess immediately after evacuation of the pus. Cases with sequestrum may be treated for a reasonable time before resorting to an operation.

What happens to the bismuth?

Bismuth is slowly absorbed and slowly eliminated by the system. Some of the paste is discharged on the dressing, some of it is encapsulated and gradually absorbed.

INDICATIONS.

All cases of intractable fistula after the original cause has been removed; cases in which the natural process of healing has been retarded.

LIMITATIONS.

This treatment is not applicable in biliary or pancreatic fistula, or in cavities communicating with the cranium or vital organs. Sequestra will usually prevent healing. Acute processes are not benefited by this remedy. With the above exceptions it has been found of value in sinuses of every part of the body.

DANGERS.

Nitrite poisoning—retention of pus and hemorrhage from the sinus are the few unwonted results. They are rare but should be watched for.

RESULTS.

To afford a fair idea of the results obtained I shall mention the reports of a number of competent observers.

E. G. Beck (*Int. Cong. of Tuberculosis*, 1908) 192 cases: 123, or 64% cured; 55, or 28% improved; 11, or 6% unimproved; 3 died during treatment.

A. J. Ochsner (*Annals of Surgery*, July, 1909, p. 151): 14 cases of chronic empyema in which operation has failed; 12 cases, or 85% cured; 2, or 15 1-3% improved.

Nemanoff (*Russki Vrach.* VII, 1568): 4 cases of chronic empyema, each cured by one injection.

Ridlon and Blanchard (*Am. Jour. Orthop. Surg.*, September, 1908): 26 cases; 13 cases, or 50% cured; 7 unimproved; 5 under observation less than one week.

L. W. Ely (*Am. Jour. Surg.*, January, 1910): 14 cases; 7 cured; 2 improved.

I. R. Pinnington (*Am. Jour. Clin. Med.*, 1909, p. 45; 19 cases of rectal fistula; 13 cures.

Following is the report of my cases:

CASE I.—M. D., U. S., aged 29; female, married eight years. Measles when a child. Developed tuberculous disease of the hip when three years old. Wore a brace until the age of ten. With the exception of stiff hip-joint she has been perfectly well up to the beginning of the present trouble, four years ago.

Family history negative. Had one child three years ago; child died at the age of one month.

Present history, May, 1906. Four years ago had sharp pain and swelling in left side of back. Was confined to bed for four months. An abscess formed in the left groin which was opened without much relief. Two months later another incision was made on left side of back at crest of ilium. Both the above incisions refused to heal and patient continued ailing. For eleven months she was treated by her physician and then she was sent to the Presbyterian Hospital for operation. She remained in the hospital six weeks after the operation and was then referred to the district nurses and dispensary.

During the following two years the patient did not seem to improve. She was again admitted to the Presbyterian Hospital, November 9, 1908. A radical operation, with removal of the head of the femur, was performed. She left the hospital after three months. Nine months later I saw the patient for the first time. She had seven sinuses leading from the hip joint anteriorly and posteriorly. These sinuses discharged about a pint of foul smelling, irritating pus daily. We had to pour formalin on the dressing to prevent the odor from nauseating patients and physicians. After a few futile attempts at cure with drains, iodoform emulsions, etc., I decided to try bismuth-paste injection. The result was astonishing. The discharge stopped almost immediately. After six injections the patient is absolutely cured. She has gained forty-five pounds in weight and is still gaining.

CASE II.—E. H., U. S., female, aged 23, single, cigar maker. Family history, negative.

Previous history: At age of three mother noticed that she limped. She was taken to the hospital for Ruptured and Crippled. Plaster cast applied for six months.

Present history: About a year ago a little abscess formed in the right groin. This opened and remained open, discharging pus continually. Came to Presbyterian Hospital Dispensary November, 1910. Diagnosis, tuberculous sinus at right hip-joint. Sinus closed after second injection and has remained closed.

CASE III.—J. K., 9 years old. Had pneumonia and empyema three years ago. Was operated upon for empyema. Sinus refused to heal. Was operated upon again six months ago. Sinus closed up after the first bismuth-paste injection and has remained closed. Patient in perfect health.

CASE IV.—J. G., German, aged 40, single, clerk. Had measles and diphtheria; rheumatism at age of 13. Mother died of broncho-pneumonia at age of 70; father living and well.

Present history: Had an attack of pneumonia nine years ago, another attack 1½ years later, followed shortly by a third attack. Patient has not been well since the first attack of pneumonia. Always had cough and a heavy dragging feeling in his side. The case was diagnosed as empyema at Cornell Dispensary and was operated upon 1½ years later at the Flower Hospital. The wound has been discharging ever since (seven years). The discharge is so profuse and foul that daily dressing is necessary. Lately the patient has had repeated attacks of profuse hemorrhage from the sinus, accompanied by alarming symptoms of collapse. Surgeons at the Flower Hospital gave him no hope. They thought the only possible cure would be a very radical operation (Schede) and the patient was in no condition for any operation. Admitted to the Presbyterian Hospital, and after careful examination was discharged as an inoperable case. Referred to me by Dr. Wm. H. Balser.

Physical examination: Patient markedly emaciated and anemic. Right chest sunken and does not move with respiration. Chest dull on percussion and there are no respiratory or vocal sounds transmitted over lower lobe. Sinus at 7th interspace discharging foul pus. Area around sinus red from irritating discharge. Long probe does not reach the bottom of sinus. Smear culture from discharge shows membranous pyrogenic bacteria but no tubercle bacilli. Gave injection of 30 drams of bismuth-paste. Discharge almost stopped after the first injection, making a large dressing unnecessary. To my surprise the patient came back two days later snugly bandaged with a wide bandage. He explained that he had been wearing a bandage for six years and missed it. After five injections the patient is almost well. There is still a small opening discharging a little serum and paste occasionally. Patient has gained weight and says he has never felt better in his life. He attends to his business and he changes the small piece of gauze dressing every few days.

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CHRONIC CATARRHAL OTITIS MEDIA AND OTO-SCLEROSIS—ETIOLOGY, PATHOLOGY AND PROGNOSIS.*

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The etiology and pathology of chronic catarrhal otitis media and oto-sclerosis are best considered under two headings: (a) catarrhal, and (b) tropho-toxic.

The catarrhal group includes the cases caused by disturbances of the mucous membrane of the upper air tract which affect the middle ear in two different ways: (1) by local inflammation of the middle ear cavity, with or without exudation, and (2) by disturbances of the ventilation and drainage of the middle ear through the tuba auditiva which cause anemia or congestion and accumulation of exudate or excreted material.

The tropho-toxic group includes the cases caused by trophic and toxic disturbances which affect the mucous membrane and subjacent ligaments and bone of the middle ear leading to defect of the middle ear sound-conducting mechanism by hypertrophy and atrophy of these tissues, and by ankylosis of the mechanism.

I. *Etiology.*—The etiology of the catarrhal group depends upon the inflammatory and obstructive disturbances of the mucous membrane of the upper air tract. The fundamental causes of these inflammations are found in the inflammations of the mucous membrane of the upper air tract which spread through the Eustachian tube to the tympanum where they produce the changes causing chronic catarrhal otitis media. These changes may be either acute, or chronic from the beginning. The inflammations of the mucous membrane about the tube are obstructive, causing a narrowing of its lumen and the consequent interference with ventilation and drainage of the tympanum. These inflammations are commonly termed coryza, influenza, purulent rhinitis, ozena, atrophic rhinitis or hypertrophic rhinitis. The common obstructive lesions of the upper air tract causing chronic catarrhal otitis media are hypertrophied adenoids, nasal occlusions and hypertrophied faucial tonsils. The above inflammations and obstructive lesions of the upper air tract usually precede the catarrhal group of chronic catarrhal otitis media.

The tropho-toxic group of chronic catarrhal otitis media and oto-sclerosis depends upon a local

* Read in a symposium on Non-Suppurative Diseases of the Ear at the meeting of the Medical Society of the County of New York, February 28, 1910.

cause or upon some general disturbance. The starting point of these trophic and toxic changes in the ear is either (1) general, (2) local, in the ear itself, or (3) to be found in the naso-pharynx, (4) in the sympathetic nerves supplying the upper air tract, or (5) in unbalanced internal secretions.

(1) The starting point of the general causes of the tropho-toxic group may be toxemia of any kind, auto-intoxication, rheumatic, gouty, or luetic conditions, intoxication by infectious diseases, intestinal intoxication and puerperal and menstrual disturbances.

(2) The local starting point of the trophic or toxic changes is local poisoning originating in the ear itself, such as poisoning from the toxins produced by a local infection.

(3) The starting point of the disturbances of the naso-pharyngeal mucous membrane which affect the ear unfavorably include infections such as chronic naso-pharyngitis, sinusitis, or infections of the lymphoid tissues of the naso-pharynx.

(4) The sympathetic nerves supplying the upper air tract become the cause of the pathological conditions under consideration by their functional instability and by their toxic derangement in chronic alcoholism, chronic tobacco poisoning, and other toxic conditions.

(5) Unbalanced internal secretions which affect the ear are disturbances of the secretions of the pharyngeal tonsil, faucial hypophysis, suprarenal and thyroid glands, and the faucial tonsil.

II. *Pathology.*—The pathological changes—hypertrophic and atrophic—produced by either variety of causes, the catarrhal or the tropho-toxic, are practically the same. One exception is seen, however, in the bone changes which are found in the tropho-toxic group. These bone changes, which include hyperostosis and vascular or rarifying osteitis, most often occur about the footplate of the stapes, causing ankylosis.

The hypertrophic changes are hypertrophy of the mucous membrane and the mucoperiosteum in all its layers, the formation of bands and adhesions, and fibrous hyperplasia of the drum membrane. The hypertrophic changes of the mucous membrane of the Eustachian tube produce a thickening of the mucous membrane with hyperplasia of the connective tissue elements, which causes narrowing of the lumen and interference with ventilation and changes in the intratympanic air tension. When the intratympanic air tension is above normal, it leads to tympanic anemia; followed by atrophy when below normal, to tympanic congestion and hypertrophy.

The hypertrophic affections of the middle ear interfere with the sound transmitting function of the middle ear. This interference is brought about through the dampening of the ossicular chain and appendages caused by the increased weight of the ossicular chain from hypertrophy and congestion, by the abnormal rigidity and impaired mobility due to the thickening of the tissues and to adhesions.

In the hypertrophic cases, after the bloodvessels have become compressed by contraction of the new-formed fibrous tissue and the blood supply is diminished, the thickening and hypertrophy become changed to atrophy and thinning, with loss of elasticity. Later on, deposition of lime salts and ankylosis takes place with consequent rigidity.

The atrophic changes are atrophy of the mucous membrane and of the mucoperiosteum, with thinning of the mucoperiosteum ligaments and drum membrane, deposition of lime salts in the tissues, rigidity of the ligaments, ankylosis of the articulations, and deposition of new bone. In the purely catarrhal cases, the fibrous hypertrophy is more marked; in the purely tropho-toxic cases, the bone changes and atrophy are most marked.

The tropho-toxic changes affecting chronic catarrhal otitis media and oto-sclerosis produce anemia or congestion of the middle ear which often produces hypertrophy of the tympanic soft parts first, and later, atrophy. These changes are similar to the hypertrophic and atrophic changes of the catarrhal group. In addition to these changes, there is rarifying vascular osteitis which is dependent on pressure paresis, fibrous contraction of vessel walls, resorption of bone, deposition of new bone, and bony occlusion of the labyrinthine windows.

III. *Prognosis.*—The prognosis in chronic catarrhal otitis media, when no treatment is given, indicates a gradually increasing impairment of hearing with an increase of tinnitus, and finally almost a total loss of hearing. In the tropho-toxic group, the prognosis is less favorable—in this group the rule is a more rapid loss of hearing with remissions and loud varying tinnitus, with final total deafness.

When treatment is given, and is directed on the indications set forth in the pathology and etiology, the prognosis depends upon our success in combating the causes of chronic catarrhal otitis media and oto-sclerosis, and in overcoming the damage already done to the middle ear. The power to combat the causes is in proportion to their accessibility, and our power to overcome the damage done in the middle ear is inversely

proportional to the advance which has been made by the atrophic changes. The most accessible locations of the causes are in the naso-pharynx. The least accessible causes are the obscure tropho-toxic ones.

The prognosis is absolutely bad in the cases where there is bony occlusion of the labyrinthine windows.

CONCLUSION.

In a broad statement, the following is true: Except in two classes of cases, i. e., (1) those cases so far advanced that the deafness necessitates using a loud voice at a foot or two distant from the patient, and (2) the extremely rare cases of the toxic group, in which the etiological factor cannot be definitely determined—the hearing in cases of chronic catarrhal otitis media and oto-sclerosis can be satisfactorily improved by carefully following the indications.

THE TREATMENT OF CHRONIC CATARRHAL OTITIS MEDIA AND OTO-SCLEROSIS.*

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The present methods of treating chronic catarrh of the middle ear are not satisfactory. This statement may seem particularly unfortunate at the beginning of a discourse on this subject, but we are forced to admit its truthfulness, in spite of many qualifications and exceptions that may be cited. The first requisite for improving our knowledge concerning a disease is a clear understanding of present limitations, for we then at least have the necessary incentive for further research and a general idea as to the most promising paths for our investigations. Why are we so helpless in chronic catarrhal otitis media? There are many reasons, chief of which may be mentioned the following:

Prophylaxis is usually neglected, because the onset of the disease may be so insidious that patients neglect to take or to continue treatment. Nature has so generously supplied us with hearing power that marked impairment must occur before we become cognizant of our inability to recognize the relatively loud sounds which alone are necessary for present day needs, and frequent recessions in the course of the inflammation tend to lull into a false sense of security, so that we imagine the difficulty will right itself as it may have done many times before.

Great numbers of acute cases tend to chronicity from their very inception, and adhesive processes may develop after few exacerbations or relapses. Especially does this occur following the exanthemata, in anemic or cachetic individuals, in those suffering from chronic or repeated naso-pharyngeal affections, and many systemic diseases.

Marked retraction of the drum membrane, fibrous or connective tissue, adhesions, and thickenings, ossicular ankylosis—from these or from calcification or ossification, organized strictures in the Eustachian tube, and perverted physiological function of the pharyngeal and middle ear apparatus—once well established, not only are our therapeutics usually incapable of then influencing the lesions against which they are directed, but so little is known and so little of even this is studied and intelligently appreciated, that treatment often degenerates into a routine application of routine measures, and the patient incidentally into a routine rounder from clinic to clinic or from surgeon to surgeon.

Comparatively few persons can spare the time or money necessary for frequent and lengthy courses of treatment. This often deprives them of permanent improvement, not because the measures used are necessarily inadequate, but because the vicious conditions in their auditory apparatus are not brought under control at sufficiently frequent intervals to prevent their retrogression to like or worse states than those held before the last application of the measures for relief.

I am of the opinion that herein lies one of the chief shortcomings of the otologist, and it behooves him to devise means which will enable patients to obtain at home treatment to supplement that obtained at the hands of the surgeon, and thus enable the ground gained at each visit to the latter to be at least maintained until subsequent treatments further advance the processes of recovery.

So much attention is concentrated upon the ear conditions that contributing factors to chronicity, such as nose and throat conditions, the general health, and systemic diseases are quite out of mind, or receive but a cursory examination.

Sometimes sensations of fullness, weight, stupefaction, depression, dizziness, or nausea, occur with catarrhal otitis, and especially with adhesive processes, and rarely pain; but the main symptoms we are called upon to relieve are tinnitus and impaired hearing. If the noises are high pitched, continuous, and but little influenced by

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treatment, it is probable that the labyrinth is coincidentally affected. The degree of deafness is likewise dependent on the amount of obstruction to sound waves in the middle ear mechanism, and on the concurrent labyrinth changes.

To improve the deafness for spoken words is our chief aim. For those with marked impair-

causes of deafness, must be directed toward providing means for utilizing the bone conduction, for in this way only can we then hope to restore audition. Other measures must of course, be persisted in, for though we fail to improve the hearing, we may stay the rapid progress of the disease and ward off complications.

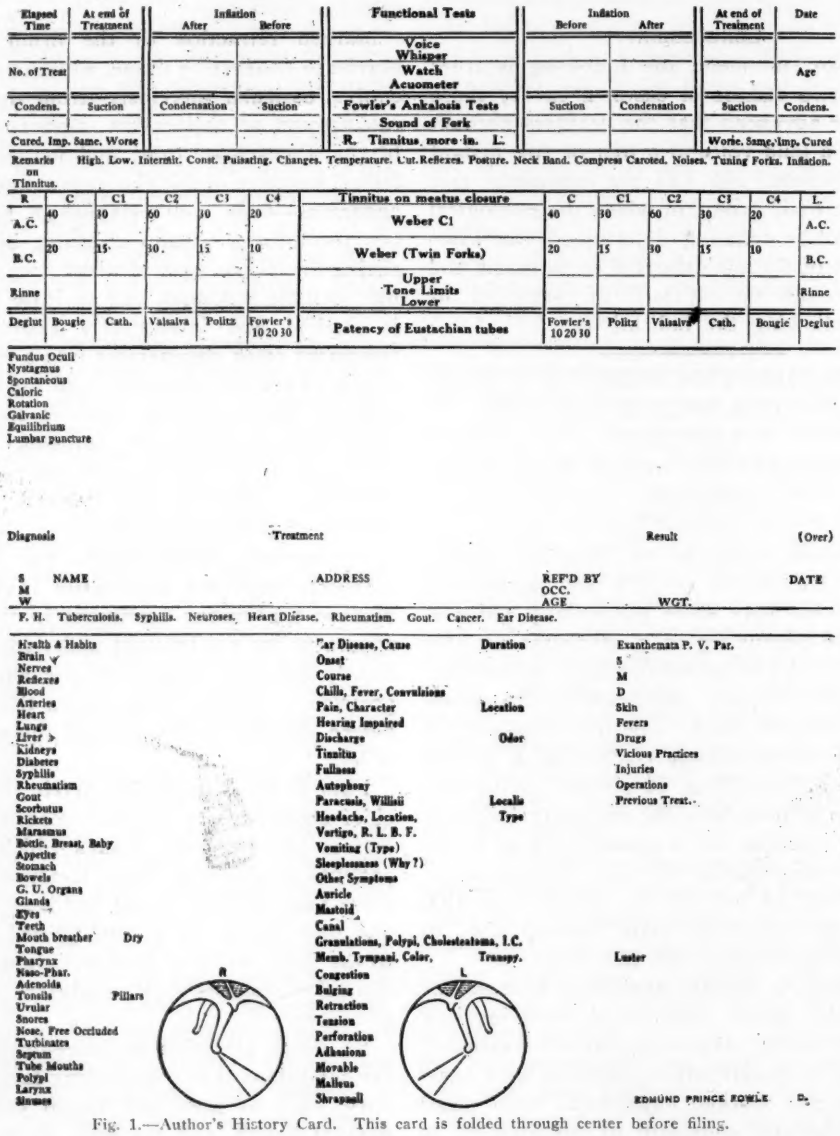

Fig. 1.—Author's History Card. This card is folded through center before filing.

ment of hearing for speech, often exhibit unexpected ability to hear music and singing. In otosclerosis, patients frequently hear better in noisy places, and this phenomenon is not uncommon with catarrhal adhesive processes. As bone conduction, except in old or advanced cases, is practically normal or relatively increased, our efforts, if unsuccessful in removing or alleviating the

The regulation means at our command for treating chronic middle ear catarrhs and their symptoms and lesions, are many and varied; but instead of fully detailing these, I believe it will be better at this time to present some of my own ideas on the subject of treatment.

Contrary to recognized custom, I will first take up the general health of the patient, for it is

often this which is the principal factor in the cause of, and this which, if improved is the principal factor in the relief of, the diseased conditions in the auditory apparatus.

For the great majority of dry catarrhs any measures of relief are of transient or little avail, if we do not diligently see to it that besides the special, the general well being of the sufferer is improved. With this end in view, my history cards are so arranged that it is well nigh impossible for me to neglect anything of importance in the family, past or present history of the case. This takes time, but anything which may be of service in this class of cases is well worth the time. In order that you may see at a glance how comprehensive these history cards are, I herewith submit one for your inspection.

As a cause of lowered health and chronic catarrhal deafness syphilis is frequently if not usually overlooked, although I found in a series of one hundred and twenty-eight cases submitted to Noguchi's modification of the Wasserman reaction that one-sixth (sixteen per cent.) of the chronic catarrhal otitis cases gave strongly positive reactions, and one-sixth doubtful or weakly positive reactions to the test. These cases almost without exception derived marked benefit from anti-syphilitic treatment. Syphilis should always be kept in mind in these cases, and especially in oto-sclerosis and nerve deafness which frequently complicate the middle ear catarrh. Tuberculosis, anemia, sclerosis, and all debilitating diseases have a marked influence on nutrition and a tendency to progressive deafness in those suffering from these diseases can be inhibited only by a simultaneous improvement in the ear disease and in the general health.

Well ventilated rooms, exercise in the open air, the avoidance of close or smoky atmosphere, and all detrimental influences, such as smoking and drinking should be prescribed. Diet, change of air and altitude, and bathing, must be kept in mind as aids to treatment. The family physician is the proper person to take charge of the case in so far as the general health is concerned, and patients should be referred to their physicians for this purpose.

In hypertrophic catarrhs, inflations of air into the middle ear are especially efficacious, but in atrophic catarrhal processes results from inflations alone are very uncertain. Nevertheless, some form of inflation is indicated, and I use Politzerization and catheterization, depending upon the permeability of the tube, and in strength depending upon this and on the tension and strength of the membrana tympani, and on the force necessary to accomplish results. There is a marked difference between results obtained from Politzerization in the hands of different surgeons, depending largely upon their expertness in its use. It is my method of choice, because it has few of the objections of catheterization and more advantages, except in certain cases. When the catheter is used, it should be supplanted by the air bag as soon as the latter becomes efficacious.

In using the Politzer bag, in cases difficult to inflate, it is all important to bring the naso-pharyngeal air pressure to its maximum at the moment the tubal muscles tend to dilate the orifice of the tube, as otherwise the air pressure will prevent a satisfactory deglutition, or coming

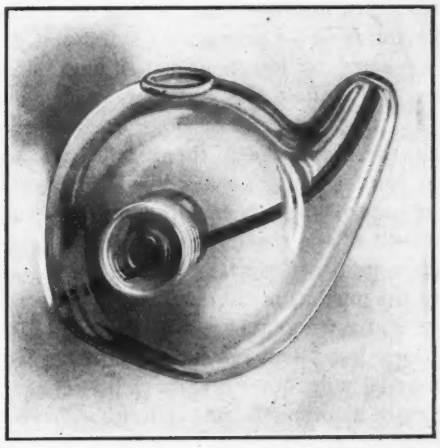

Fig. 2.—Author's Nasal Douche.

late will expend much of its force into the pharynx, mouth and esophagus.

There are numerous ways of gauging the exact moment of deglutition, but to my mind the following simple guide is the most accurate and the best. With the disengaged fingers of the hand holding the nose piece of the Politzer bag into the nose, close the other nostril as near its entrance as possible and allow one finger to rest against the lateral wall of this side of the nose. The nasal wall being very mobile in its cartilaginous portion, will easily indicate any changes of air pressure within the nasal cavities, so that the moment the soft palate by its tensification and ascent in close approximation to the posterior pharyngeal wall compresses the intranasal air, this change is necessarily at once appreciable to the expectant finger, and if the air bag is then quickly compressed, we have so co-ordinated our manipulations as to be most conducive to a

successful inflation. A slight pressure on the air bag prior to deglutition accentuates the delicacy of the above method.

With the average patient it is well to allow a little water to facilitate deglutition, as with chronic catarrh of the middle ear the mucous membranes of the mouth and pharynx are prone to harbor a scant supply of moisture, and swallowing under these conditions is not only difficult but abortive in so far as it effects the patency of the tubal mouths.

By the use of the Politzer method or catheter various medicines may be injected into the Eustachian tube and middle ear. My experience with these, though limited, leads me to the belief that only mild irritants should be used, for although severe reactions set up by strong medication may bring about improvement in the hearing or the tinnitus, this improvement is transient, and is usually followed by aggravated symptoms.

If we could by injections loosen the ankylosed ossicles and soften the ligaments and adhesive bands, so that inflations or other treatment could stretch these and keep them thus, we would indeed have a valuable asset at our command, but the improvement is usually transitory and the final result of the reactionary processes is apt to further complicate matters. In succulent swellings of the mucous membranes, it is reasonable to believe that astringents are indicated, and in these conditions injections are most useful, especially if combined with other measures for relief.

Recently thiosinamin and fibrolysin have been used hypodermatically, but it is doubtful whether either is of benefit. In my opinion if we are to find a remedy which is to influence local lesions in and about the ear, it would be more logical to concentrate our energies on these parts, unless the ear disease is dependent in large measure upon systemic conditions.

Medicated vapors are useful and agreeable to the patient in some cases, but it is difficult to bring them into intimate contact with the whole middle ear, and their effect is therefore too transient. Vapors of turpentine, salammoniac, menthol, chloroform, acetic ether, ethyl iodide or chloride, tincture of iodine and carbolic acid, oxygen and hydrogen gases have been used. Menthol vapor is sometimes very useful in overcoming tubal strictures due to swelling of the mucous membrane.

Strictures of the Eustachian tube, if not organic, may be more or less benefited by air inflations, but these failing the bougie must be resorted to, not only for treatment, but for diagnostic purposes. Whether the bougie be medicated or not, depends on the indications in each case. In order to facilitate its passage, it should always be dipped in vaseline or some bland lubricant, and too much care cannot be exerted to avoid traumatism and perforations in the tubal walls. Repeated applications may be necessary before a stricture is dilated sufficiently to allow the bougie to pass, and at each effort the bougie may be allowed to remain in position for a considerable length of time, usually from ten to fifteen minutes.

As a rule, connective tissue strictures are not permanently benefited by dilatation, and subsequent treatments are less and less effective in these cases, owing to the progressive lesions in the tympanic cavities. The bougie may be used also for massage of the tube, but its effects are not permanent and are attended with danger.

With proper apparatus electrolysis may be used in connection with the Eustachian bougie, and in many resistant cases this method would seem to be the method of choice, at least until the ordinary instruments can be successfully brought into action.

Pneumatic massage of the middle ear by way of the external auditory canal is of real value if combined with the other methods indicated, and if used intelligently—I make this statement advisedly, for of all modalities, with the exception, perchance, of electricity, massage is the one most frequently abused. I find that the best results may be obtained with slow gentle vibrations, and I administer these at the same time as the middle ear inflations, either by means of my apparatus for simultaneous inflations of the middle ear and external auditory canal, or by so connecting up an electric air pump that the massage and inflation are automatically accomplished. To obtain the best results, I am still of the belief that this must be done so that at each inflation through the Eustachian tube the air in the external meatus is simultaneously slightly compressed. Artificial supports to a relaxed drum membrane are beneficial. Paper discs, artificial drums, and flexile collodion painted on the membrana tympani, all serve a useful purpose. In chronic catarrhal otitis media, treatment must not be continued for too long a time, for as soon as it ceases to benefit, unless stopped, it may make matters worse instead of better. It is usual to give three treatments a week for five or six weeks, but every case must be managed according to its individual peculiarities.

At the present time, operative measures in the

middle ear are not much in vogue, for the reason that fibrous and connective tissue adhesions are likely to result to such an extent that nothing will have been gained, and much lost thereby. Incision of the drum membrane is warranted in hypertrophic cases, when other measures fail to evacuate fluid from the middle ear. Tenotomy of the tensor tympani tendon is indicated in some cases for without this measure it is impossible to relieve the inter-ossicular tension, though the other anchylosing processes have been successfully combated. Like all muscles, the tensor tympani becomes permanently shortened after its point of attachment, the malleus, comes to occupy an abnormal position at a diminished distance from its place of origin. After a time the muscle ceases to have any but a retracting influence on the malleus, and therefore, loses one of its functions, that of regulating and aiding middle ear ventilation.*

Of the utmost importance in catarrhal otitis is the treatment of pathological conditions in the

Fig. 3.—Author's Automatic Ear Inflator.

nose and naso-pharynx, not only to give free nasal respiration, prevent venous engorgements from slight causes, and to restore the patency of the Eustachian tube, but to reflexly influence the ear conditions and to enable the tubal and pharyngeal muscles involved in the act of swallowing to properly functionate and thus put them in condition for efficient action on the tubal mouths. This is usually not an easy task, and in routine otological practice it is often neglected, but unless successful, all other measures may as well be abandoned, for no permanent benefits are possible unless this apparatus receives adequate attention. In the young especially, we can successfully treat and guard against ear disease by proper attention to the nose and lymphoid ring in the pharynges.

Properly executed nasal douching will greatly benefit many naso-pharyngeal diseases, and thus also the otitis. Heretofore, the nasal douche has not been in great favor because of its disagreeable and even dangerous possibilities. This was because patients could not avoid getting the fluid into the throat, and the violent efforts of hawking, spitting and blowing to remove the fluid therefrom. In this way infectious material may be sucked into the Eustachian tubes and find a nidus for future development.

To prevent any such deleterious action, to close the tubal mouths, give a definite direction to the irrigating stream, prevent automatically any fluid from geting down into the throat, and to make the douching absolutely safe and agreeable, I have devised an instrument which in extended use has given great satisfaction. Its construction is such that to be used at all it must necessarily be used correctly. The force of the douching current is intuitively under perfect control, as it depends upon the act of blowing through the lips, and this blowing must necessarily closely approximate the soft palate to the posterior pharyngeal wall and close the tubal orifices, thus at once preventing fluid from entering the tube or throat, and all necessity for any hawking efforts, subsequent to the cleansing process. I trust you will give this method of nasal douching a trial, for I feel confident of your endorsement as to its safety, efficacy, and agreeableness.

There are two other measures which I have originated for the purpose of supplementing office treatment in catarrhal otitis and which I shall briefly describe. The first is known to many of you, and I trust you have found it as great an aid in your cases as I have in mine. I refer to my automatic middle ear inflator. This instrument, if used in proper strengths, cannot fail to help maintain the patency of the tube, physiologically exercise the muscles involved in middle ear ventilation, and withal, put into patients' hands a measure whereby they can regularly do something for themselves at home without fear of possible harm. In all other methods heretofore proposed to accomplish like results, there has been no way to avoid carelessness, over-zealousness, or stupidity on the part of the user, but my little balloons are so constructed that no matter how they are used they cannot but exert an even pressure, and in amount depending on the size ordered. There are three sizes made, giving respectively 10, 20 and 30 mm. mercury pressure. This pressure will remain practically stationary, no matter to what extent they are inflated, and if the act of swallowing be inadvertently performed before inflation, the collapsibility of the air bag will prevent sufficient intra-nasal vacuum to deflate

* *Jour. Am. Med.* July 31, 1910—Physiology of the Eustachian Tube—Fowler.

the middle ear. The method of using the device is simply to place it tightly into one nostril, to close the other nostril, inflate the balloon by blowing into it through the nose, and then to swallow. You will appreciate that we have here an aid to nature's method of middle ear inflation, the best method by far, if practicable. I can vouch for its efficiency in scores of cases, and not only as an aid in chronic cases, but as a valuable prophylactic treatment.

The second aid to treatment is in principle similar to an older method, namely, that of hermetically sealing up the external auditory canal, with plugs of cotton saturated with cocoa butter or with wax. The idea was to cause the absorption of air from the canal to more than offset that from the middle ear, and thus prevent the retraction of the drum and ossicles from recurring. The idea was good, but the method of utilizing it was poor, for it was impossible to know what was going on behind the opaque ear plug, and on inserting or removing these, the air in the canal must have been condensed or rarified, and necessarily have acted on the drum membrane. The method was, therefore, capable of quite as much harm as good.

I propose to utilize the principle and the good, but to eliminate all harm by using what I designate as middle ear splints. They are splints, because they furnish a means of limiting movement of the drum and ossicle, a greatly to be desired action in innumerable cases. These splints are cylinders which may be inserted into the external auditory meatus. They are grooved perpendicularly through their axes on their external surfaces to allow of lubrication and easy insertion, and to enable their contact with the meatal walls to be absolutely airtight. Inside of the cylinder, slightly inclined from the perpendicular is a plano-convex lens, the plane side outermost, as in Siegel's otoscope. This is firmly secured in place, and beneath its circumference a small tube passes to allow the meatal air free exit or entrance while placing or removing the instrument. After placement, this air vent is closed by a small metal plunger, the ear splint hermetically seals the canal, maintaining all the time the status quo in the previously inflated middle ear, allowing the drum sufficient movement during deglutition or inflation, and preserving an unobstructed magnified view of the field of operations. I believe I have even in this brief account, said sufficient for you to appreciate the possibilities of this aid to treatment.

In closing I would recall to your attention the application about the neck of a constricting band. In some cases of severe tinnitus this measure only will diminish the unbearable head noises.

THE IMPORTANCE OF THE CLINICAL LABORATORY IN SURGERY.

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Every surgeon realizes that his work does not simply consist in performing operations. There is a great deal more to an operation than the removal of diseased tissues, and if the surgeon's mind is not too firmly fixed on the operative condition but is trained to include every helpful or hindering factor, ultimate success—not merely surgical success—will be the result of his work.

It is generally considered that the facilities of a clinical laboratory offer the surgeon much assistance in gaining a general insight into his patient and his inner workings. Laboratory investigations have come to be imperative procedures prior to an operation, and, again, in many cases the laboratory is made an efficient guide to the post-operative treatment.

When a physician situated in a large city has a case requiring surgical attention, the hospital is naturally one of his first thoughts. One rarely finds a surgeon operating upon his pateint at home unless the case happens to be one of great emergency, or there is a marked antipathy to the hospital. Indeed, to-day it is customary for both laity and profession to immediately associate the thought "operation" with "hospital." This is, of course, right and proper, and the advantages provided by an up-to-date hospital are essential to the convenient preparation and after-care of the patient. But the advantages of the hospital do not consist simply in a splendidly equipped operation room and the various paraphernalia used in or near it, but also—and this is by no means the least important—in the clinical laboratory, in which the various essential investigative measures can be conveniently and thoroughly carried out.

For this reason the laboratory and its work has become a matter of comparatively little concern to the city physician or surgeon, since his telephoned instructions are to "Make a blood examination for X.," "Have Y's urine carefully examined," or whatever the exigencies of the case demand. In many cases there is a standing order for a definite laboratory routine which is carried out in every case.

This is as it should be; but, unfortunately, frequently there is not quite as much interest evinced in laboratory methods among the surgically inclined physicians who happen to be situated in those districts where laboratory facilities are not so convenient as in the city and the work is not so easily done as by simply ordering it over the telephone. While the fact cannot for one moment be contended that the need is just as great whether in the city or in the country, this is not often appreciated, and all too frequently the perfunctory test of a single specimen of urine for albumin and sugar constitutes the sum total of the "laboratory work" done by many provincial surgeons. For this reason it would seem that more attention must be given by many physicians to the importance and advantages of laboratory help in surgery.

Of course, it is easily understood that many surgical conditions are diagnosed by laboratory procedures and in many more the tentative diagnosis is definitely established after, say, a blood examination or some other laboratory investigation. Still, to my mind the laboratory offers the surgeon its very best services in laying bare the other important conditions present in his patient which, if overlooked, might prove a serious menace, or, at least, a hindrance to the successful outcome of either the operation or the anesthesia.

The urine examination is one of the most important pre-operative diagnostic procedures. The urine of every individual upon whom an operation is expected to be performed should always be carefully examined prior to the operation at least once. Two or three times would be much better, since sometimes certain urinary findings may be unusually marked or entirely absent in one single specimen. The examination for albumin alone is not sufficient, for its presence is not necessarily evidence of structural kidney disease, nor, for that matter, need the finding of hyaline casts be considered as serious. These tests, of course, are not valuable unless the functional capacity of the kidneys and liver, as well as the metabolism in general are also known. The physician who neglects to study these points is overlooking possibilities which may be of prime importance to the success of his work.

Naturally, if organic renal disease is present the anesthetist hesitates to administer a general anesthetic. Is it not just as dangerous to contend with other conditions that are not evidenced by the crude and practically worthless tests that are commonly used? The importance of the relation between the normal elements of the urine, as well as the presence of abnormal elements should receive just as careful attention, for from these figures a far better idea of the metabolism may be obtained.

It is well known that certain insidious disturbances of metabolism may be present in an individual without any decided symptoms to warn him of this fact. It is quite reasonable to suppose that a tolerance to these conditions may be interrupted or entirely lost when he suffers from a severe traumatism or the heavy burden of a general anesthetic. For this reason it is believed that the urine should always be quantitatively tested for acidity, total solids, urea and indican, in addition to the other tests for abnormal elements such as albumin, glucose and the acetone bodies. It might be well also to include in the routine a test for occult blood and bile, for obvious reasons.

Attention should be given to the acidity of the urine, for it has been found to be a very reliable guide to the general vital resistance. It is well known by physiologists that upon the proper maintenance of the normal alkalinity of the blood depends the proper carrying out of its normal functions; in other words, if the alkalinity is reduced, the normal interchange of gases cannot take place, phagocytosis is disturbed and the resistance of each microscopic cell structure is materially diminished. This would seem to be an important factor in the pre-operative investigation of a patient, since many surgical operations, as gynecological operations, are done after considerable premeditation, and not on the spur of the moment. In these cases, at least, it is reasonable to presume that both patient and physician are anxious to have every circumstance as propitious as possible, and in my opinion a patient coming for operation with a urine showing the total acidity to be increased two or three hundred per cent. is not in the best condition either to stand the anesthetic or to recuperate after an operation.

The general conditions that are associated with a marked diminution in the amount of urinary solids, and especially urea, are of paramount importance. It must be remembered that not only is there frequently a relation between low solids and renal disease, but very often it will be found that the liver and thyroid are not functionating as they should. When this is the case, and the solids are less than half the normal that should be passed in twenty-four hours, the circumstances are not nearly as favorable to a successful outcome of an operation as though they were practically normal.

The condition of the bowel must needs be a prolific cause of diminished resistance and undoubtedly advances have been recently made in the study and appreciation of these conditions and the findings associated with them. Auto-intoxication must

be considered as an absolute contraindication to all save emergency operations. The presence of indican in the urine should always receive attention, although it is granted that indican itself may be an entirely inocuous substance. It is reasonable, however, to suppose that the conditions which excite its manufacture are, to say the least, not the most favorable to recovery after a serious operation.

It will not be my endeavor here to go into the discussion of the importance of sugar in the urine from the surgeons' standpoint. It is generally known that there is a greater danger of coma supervening after an operation upon a patient suffering from diabetes, and this fact should always be properly weighed before operating. Attention has been called by some writers to the danger of coma following operations on diabetics that had been supposedly cured for several years.

The acetone bodies are of even greater significance than sugar, for upon their presence depends the acidosis which is so dangerous. The ammonia-index is another factor which must not be neglected. This, in connection with the acidity, will give one an excellent idea of the condition of the metabolism and elimination of any patient.

There are many other procedures practiced in the laboratories besides the uranalysis, and many of them may be made of immense value to the surgeon. I need only mention the recent work that has been done with vaccine therapy and how some progressive surgeons, notably W. H. Hutchings, of Detroit, are now immunizing their patients by injecting doses of polyvalent vaccines before operating, and thus precluding the possibility of an infection.

The examination of the blood, both to gain an idea as to its upbuilding powers (hemoglobin and red cells), as well as the determination of the presence of leucocytosis, are too well known to be dwelt on here. Yet, it is strange that so many times no recourse is had to this invaluable test, and a comparatively simple appendicitis, for example, is allowed to become gangrenous. The whole subject of the blood examination from the surgical standpoint is admirably discussed in a splendid book by Ira S. Wile, of New York, which every surgeon should have and read.

Another matter of importance which has received very little attention is the estimation of the coagulability of the blood. Many times a surgeon has had a "close shave" by operating upon a patient with hemophilia, or, at least, a diminished calcium content of the blood. If the actual investigation is impossible, it is easy to consider every patient a "bleeder" and give him sufficient calcium (15 grs. calcium lactate t. i. d. for three or four days prior to operation) to reduce to a minimum the hemorrhage which the operation might cause.

The examination of sputum, feces, pus and various body fluids needs only to be mentioned in passing. The diagnosis of various malignant conditions by the examination of stained sections of tissue must not be forgotten. In closing I would like to lay particular stress upon the need for a great deal more laboratory work in the surgical part of the practice of the average physician, and especially upon the advantages which the complete examination of the urine, both before and after operation, may bring with it.

72 MADISON STREET.

LOCAL ANESTHESIA.

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KANSAS CITY, MO.

(*Continued from the September number.*)

OPERATIONS UPON THE EXTREMITIES.

Operations upon the extremities may be divided into those in which local anesthetics are used as the method of choice and those in which local anesthesia is used only when the general anesthetic is contraindicated. In the former class may be included operations for diseases and injuries of the fingers and toes, while in the second class belong major amputations or resections. In the former class local infiltration is sufficient while in the latter nerve blocking must be employed.

Operations on the Fingers and Toes.—The opening of superficial abscesses and the removal of foreign bodies may be done with local infiltration immediately about the area in question. In case of foreign bodies the needle may be passed beneath the skin through the opening made by the foreign body. Less pain is caused by this method than when the skin is perforated in the uninjured region since foreign bodies usually occur in the palms of the hand and the soles of the feet where the skin is thick and at the same time well supplied with nerves. If the foreign body has already caused inflammation the healthy skin about should be infiltrated as in the case of abscess. When the foreign body is imbedded beneath the nail the area about the root of the nail should be first infiltrated and the site of the offending object approached. The nail bed is much more sensitive than the skin about the base of the nail. The plan as illustrated for ingrowing nail is followed approximately.

In case of abscess the healthy skin about the abscess should be injected but no injection should be

made directly into the inflamed tissue. In slowly forming abscesses it may be sufficient to infiltrate the skin over them, but when acutely inflamed the healthy tissue in the circumference should be infiltrated.

In deep abscesses involving the periosteum or tendon sheaths, especially when acute, circular infiltration with regional nerve blocking should be employed. A linear infiltration should be made about the base of the finger as for a simple skin incision, followed by a deep injection on each side of the bone as nearly as possible in the region of the digital nerves. This is done by passing the point of the needle dèeply into the tissues so that it is as nearly as possible in the region of the nerves. Usually 10 or 15 minims are needed to each side of the finger when quinine is used, and twice as much or more if Schleich No. 2 is used. The opening of the abscess or the amputation may then proceed in the usual manner. As in most perineural injections some time may be required for the anesthesia to become complete. If the periosteum is painful it may be infiltrated, but usually this is not required.

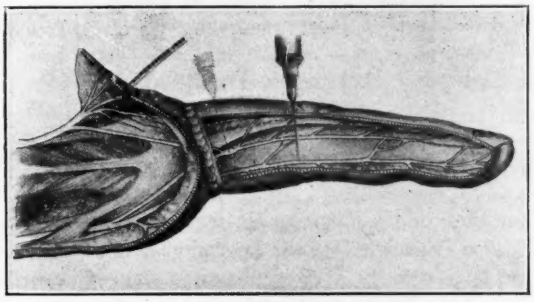

Fig. 1.

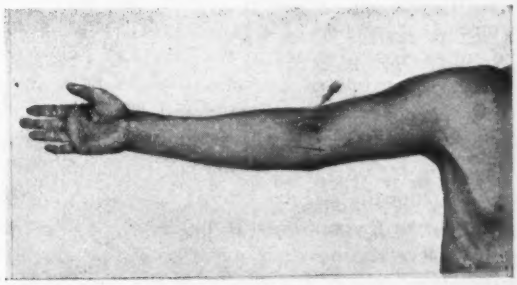

Fig. 2.

Operations on the hand or foot involving the removal of the metacarpal or metatarsal bones are not satisfactorily done by local infiltration. Incisions and many operations upon the soft parts are easily performed. The metacarpal and metasarsal bones may, however, be removed by edematization of the soft parts immediately about the bone. It is necessary here to use large amounts of the fluid since the nerve trunks cannot be directly infiltrated. For this use a ¼% solution of quinine may be employed or the Schleich solution No. 2. For more extensive operations about the foot and hand, nerve blocking in the arm or thigh as described in the section or major operations will be necessary.

Ingrowing toe nails.—This affection is observed with such frequency and a skillful treatment is so gratefully acknowledged by the patient that a special consideration of it seems warranted. The nail of the great toe is usually the seat of this affection. The ease with which a radical cure may be affected has caused operative interference to supersede palliative treatment. No matter which operation is to be performed the anesthesia is secured in the same way. The initial prick is made over the joint in the soft parts on the side of the toe, and the infiltration is continued forward toward the tip, the blanching of the skin ahead of the needle being the index of the rapidity of the advancement of the fluid. When the extremity of the toe is reached the needle is reversed and the nailbed infiltrated well back over the matrix. The tissues in this region are tense and sensitive, and this condition is much heightened when inflammation is present as is usually the case when the patient presents himself for treatment. It is necessary, therefore, to use the utmost gentleness in pressing down the piston. If pain is caused, a halt should be made until the painful tension gives way to anesthesia. A rough operator may cause as much pain in making the infiltration as would be caused by the removal of the nail without anesthesia. The nail is then resected or the soft parts removed and the treatment subsequently carried out along conventional lines. It is desirable to begin the infiltration from the base of the nail instead of from the extremity of the toe, as is usually recommended, because the skin in the region of the base of the nail is less sensitive. If ethyl-chloride is used as a preliminary to the local anesthetic the injection may as well be begun from the extremity as from the base of the nailbed.

Major Operations Upon the Extremities.—Operations of any magnitude upon the extremities may be performed under local anesthesia. This method is not the operation of choice because it is tedious and time-consuming for the operator, but in certain cases the operator owes it to his patient to subject himself to the inconveniences of local anesthetic in order to spare his patient the dangers of a general anesthetic. The list of diseases which

give indication most frequently for its use includes senile gangrene with the attendant arterial and cardiac disease, cancer of the extremity attended by similar constitutional disturbance and gangrene complicating diabetes. Schleich has had considerable experience in the amputation of extremities for diabetic gangrene and he asserts that the theoretic objection offered that the infiltration might be followed by gangrene in the region infiltrated has no foundation in fact.

The writers believe that in many cases of acute osteomyelitis where the patients are septic local anesthesia might frequently be employed. Patients in such a condition collapse very quickly when operated under general anesthesia. This may in a large measure be avoided by the use of local anesthesia (see opening of abscesses).

The method elaborated by Crile and Matas, designated nerve blocking by the former, is the most useful method. It consists in exposing the nerve or nerves leading to the region to be operated upon and injecting the anesthetic directly into the trunk. A circular injection of the skin may be made around the entire circumference of the limb well above the seat of the proposed operation. This is done to block those nerves running in the skin which are peripheral ramifications of cutaneous nerves supplying the region. When this has been done lines leading from the circular line of infiltration are infiltrated over the nerves to be blocked. In those regions where the nerve is more accessible at some point other than at the region of the circular line, independent lines of infiltration may be made. For instance, in operations on the foot, the circular line of infiltration is made above the knee, while the sciatic nerve is more accessible at a higher point (*vide infra*).

Specific directions for the employment of these general principles as applied to the arm may be stated as follows: if the forearm or the carpal bones is the seat of the operation, a circular line of infiltration is made about the arm above the elbow. From this line lines parallel to the median and musculo-spiral nerves are made exactly over the site. In these lines incisions are made down to the nerve. When the nerve is exposed, injection is made directly into the sheath. The sheath is moderately distended with fluid, 5 to 15 drops being usually used. If the nerve exposed appears smaller than expected, search should be made for an accompanying trunk for if high division of the nerve is overlooked, anesthesia in the region supplied by that portion of the nerve which has escaped injection obviously would not occur.

In the leg a circle of infiltration is made above the knee and along a line parallel to the course of the nerve at the upper angle of the popliteal space. The nerve is exposed at this point and injected. If the operation is to be performed on the lower point of the leg or foot such injection will suffice. If the region nearer the knee is to be attacked, the anterior crural in addition must be exposed and

Fig. 3.

Fig. 4.

anesthetized. The nerve is best exposed in Scarpa's triangle. If the operation is done next to the knee, and in other instances as well, if desired, the sciatic between the tuberischii and great trochanter may be exposed and injected. The sciatic at this high point is more easily exposed than at the upper angle of the popliteal space, particularly in high division of the nerve. The objection to the high injection is the difficulty of maintaining an aseptic dressing over the wound. Wounds in persons reduced in nutrition, as is usually the case when local anesthesia is resorted to, are peculiarly liable to infection. Wounds made for the exposure of nerves may after injection be sutured or they may be allowed to remain open until the completion of the operation. If cocain is used the latter plan is preferable for if the operation is prolonged the anesthesia may disappear and renewed injection may be required. If quinine is used the anesthesia will last with certainty through any operation. With this method a large number of major amputations have been performed painlessly. The technic of local anesthesia really consumes much less time than those who have not seen it employed seem inclined to believe. In fleshy persons it is more difficult of application as are all local anes-

thesias, but frequently because of cardiac complications the more important.

Recently Bier has proposed the intravenous use of anesthetics for operations upon extremities, particularly resections of the knee joint. The vessels above and below the area to be anesthetized are shut off from the general circulation by means of elastic constrictors. The anesthetic is then injected directly into the vessels. Anesthesia is said to be complete in 20 minutes.

It seems probable that intraspinal anesthesia will limit the use of local anesthesia for major operations upon the extremities because of its greater convenience for the operator. Though attended by some dangers, certainly greater than local anesthesia by quinine, few operators will subject themselves to the inconvenience of the local anesthesia in order to secure for their patient the slightly increased safety. With increased experience with local anesthesia these conditions may become changed.

THE TRAINED ASSISTANT.

A good assistant contributes largely to the success and reputation of the famous surgeon. An occasional assistant is occasionally responsible for the occasional stitch abscess and peritonitis that occasionally bobs up in the practice of a surgeon whose work could not otherwise be criticised, and which would rarely happen if he selected his team carefully compelling each member to become master of his position and to keep his place. The effect of the above is quick and thorough work.—F. D. SMYTHE, in *The Memphis Medical Journal.*

TUMORS OF THE SIGMOID.

Among the symptoms of tumor of the sigmoid must be placed disturbance of function causing irregularity of the bowels, and gripings attended by discharges of mucus, blood, and occasionally a little pus. These mucous discharges are not necessarily accompanied by feces. Very often there is an unsatisfied feeling, with straining, after the evacuation from the bowels. In the majority of cases the first real evidence of tumor is brought about by interference with the progress of the bowel movement, giving rise to pain and borborygmus, accompanied by "stiffening" of the intestine and visible peristalsis. This partial obstruction is very significant. If it has existed for some time the distended intestine can be seen above the obstruction, the sequence being a crampy colicky pain, visible peristalsis, stiffening of the intestine immediately above the obstruction and gurgling sounds like water and air in a bottle.—W. J. MAYO in the *Montreal Medical Journal.*

SOLITARY PERFORATION OF THE ILEUM ("PROXIMAL ULCERATION OF INTESTINAL OBSTRUCTION") ASSOCIATED WITH STRANGUIATED AND OBSTRUCTED HERNIAE. REPORT OF TWO CASES WITH RECOVERY.

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Under the name of "Dehnungs-geschwür" (distension ulcer), Kocher has described a condition of solitary perforation or ulceration of the intestine in connection with the various forms of intestinal obstruction. He believes that the importance of these lesions has not been sufficiently recognized and it would seem that his contention is well founded since the text-books, with few exceptions, fail to touch upon the subject.

Of the following two cases the first was operated upon in December, 1908, in the service of Dr. Rogers; and the second in the service of Dr. Erdmann, in August, 1909,—both at Gouverneur Hospital.

CASE I.—Previous history negative as to alcohol and venereal diseases. She has had several children and the youngest is sixteen years of age. Has always suffered from constipation. She gives a history of a left-sided inguinal hernia of many years standing; has worn a truss which has always been ill-fitting. Present history dates from the afternoon of the day of admission, when the hernia became suddenly irreducible and very painful. It was several hours before her physician could be reached and upon his arrival he found that the patient herself had reduced the mass. She relates that before the replacement of the hernia, she was seized with violent pain in the abdomen, most severe in the region of the umbilicus. Subsequently she vomited several times and with the increasing pain, became prostrated. The tentative diagnosis of reduction *en bloc* was made by her physician. On admission to the hospital her temperature was 101.6°, pulse 88, respirations 24. Examination of the abdomen showed considerable distension. There were present marked rigidity and tenderness; the latter was more pronounced about the umbilicus. The liver and spleen were not palpable. Taking into consideration the previous history, the diagnosis was rather uncertain.

An exploratory incision was made just below the umbilicus. Upon incising the peritoneum a moderate amount of sero-purulent fluid and some feces were revealed. The intestines were covered with fibrin flakes of beginning peritonitis. In the lower part of the ileum there was found a round, solitary perforation with well defined edges and about one-half inch in diameter. This was closed with a

pursestring suture of Pagenstecher thread and reinforced by several Lambert sutures of the same material. The intestine and mesentery about the perforation were entirely normal. However, about eight to ten inches distal to the perforation, the gut was found markedly contused, showing signs of recent strangulation. There was no solution of continuity of the peritoneal layer and the intestine responded to the usual tests for visibility. It was therefore returned. The peritoneal cavity was sponged out and the abdominal wound was closed by tier suture leaving a small aperture for a cigarette drain. Owing to the patient's condition the hernia was not repaired. For three days following, the patient vomited at frequent intervals small quantities of greenish fluid; her tongue during this time was heavily coated and leathery. From the cessation of these symptoms the recovery was rapid and without incident. Blood specimens were Widal negative.

CASE II.—Italian, 50 years of age. He is a moderate drinker of beer and whiskey. About eleven years ago he sustained an injury to his left eye which was later enucleated. Six years ago he received a fracture of the left leg. He gives no history of gastric or intestinal disturbances. He has had a right inguinal hernia for two years and has worn a truss. On the afternoon of the day of admission his hernia came down into the scrotum; soon thereafter it became painful and tender and later he was seized with colicky pains in the abdomen; there was no vomiting. His bowels had for several days been constipated. His abdominal pain increased in severity and late in the night he was removed to the hospital. His chief complaint on admission was pain in the abdomen. Of his inguinal tumor he complained but comparatively little. Examination of the abdomen showed moderate distension. There was marked general rigidity and maximum of tenderness about the umbilicus. There were no masses palpable. Examination of the right scrotal region disclosed a large painful mass which with manipulation became reduced. The blood count showed a leucocytosis of 12,000 with 86% polynuclears. The temperature was 102.8°, pulse 100 and respiration 36. Before being taken to the operating room the patient vomited a dark greenish fluid.

Under anesthesia an incision was made in the median line. Upon opening the peritoneum there escaped a quantity of dark brown fluid, and upon separation of the presenting coils of intestine there appeared a small stream of feces leading from a perforation. This was identical in appearance with the one described in the first case,—round, with well defined edges, and about half an inch in diameter. About the perforation there was no alteration in the bowel wall and neither was there any induration. An examination of the gut distal to the lesion disclosed no gross alteration as described in the first case, indicating that the degree of compression had been of less severity. The perforation was closed with suture of Pagenstecher, and the peritoneal cavity cleansed as far as possible with saline sponges. The abdominal wall was sewed up in layers and two cigarette drains were introduced. The hernia was not repaired. The day following the operation the temperature was normal, but on the seventh day had risen to 100°. The pulse during this time remained about 100. At the end of two weeks, during which time the temperature had risen occasionally to 102°, there was no further elevation. During this period the patient complained of colicky abdominal pain and was constipated, so that daily enemas were necessary. At the end of three weeks the abdominal wound had healed and the bowels moved without aid. Widal reaction, negative.

There are several points of interest in the history of these cases. In the first case the onset of the strangulation was quite sudden and acute, and the damage inflicted upon the intestine was considerable, as revealed by the abdominal operation. It is interesting to note that the mass was reduced by the patient herself.

In the second case the hernia likewise suddenly became irreducible, but with less severe symptoms. The pain in the scrotal tumor was but slight and was entirely overshadowed by that in the abdomen. The ease of the reduction was surprising and was unlooked for. It had remained unreduced for nearly ten hours. This case points to the fact that comparatively slight damage to the intestine may be followed by such a lesion as described. Both patients presented themselves with histories and symptoms which would admit of no diagnosis except as revealed by exploratory laparotomy. Having in mind the condition as found in the first case its presence was conjectured in the second.

For an explanation of this interesting lesion we must turn to Kocher, who states that the common cause of death in all forms of obstruction by strangulation as well as by stricture, whether acute or chronic, is not due to such strangulation with local gangrene and ulceration, but by lesions in the intestinal wall above the seat of obstruction. These lesions consist in the formation of circumscribed necrosis of the mucous membrane, going on to sharply circumscribed ulceration through the whole thickness of the wall, giving rise eventually to perforation. The cause of these ulcerations is not, as has been described, due to the presence of hard fecal masses pressing for some time on the same spot; neither is it due to any lesion of the mesenteric vessels. The same lesion of ulceration is found in the ileum and jejunum where the bowel for the most part is filled with liquid contents. Kocher has experimentally distended the bowel with gas and fluid and has produced the same lesions. By such distension and without the slight-

est interference with the mesenterial circulation, the bowel becomes quite blue by reason of venous stasis. As a consequence of this, ecchymosis may form in the mucous membrane, the nutrition is altered and the protective influence of the epithelium (Cassin and Charrin), which has been proved to be of such importance, is destroyed. Under the influence of the increasing venous stasis and of the absorption of the increasing toxic products, there results a necrosis of the mucous membrane (beginning at the above-mentioned ecchymotic spots) going on to ulceration and perforation.

Under the title "Follicular Perforation of the Ileum," Brewer, in 1899, presented before the New York Surgical Society, a specimen obtained from a woman forty years of age, suffering from a strangulated femoral hernia which had existed four days. An immediate operation was done. About seven inches of very dark intestine were found in the hernial sac, which also contained a certain amount of dark colored fluid. As soon as the constriction was relieved, the color of the gut improved and it was decided to drop it back. After twenty-four hours the patient developed symptoms of peritonitis and died very suddenly. At autopsy, as soon as the abdomen was opened free gas and pus escaped through the incision, showing that a perforation existed. The portion of the gut which had been strangulated, although somewhat necrotic in parts, showed no perforation; but seven inches above the strangulated area there was found a distinct perforation of the ileum; the peritoneal surface was the seat of recent adhesions and the mucous membrane in the neighborhood was in a state of acute enteritis.

A fairly diligent search of the literature reveals but scant reference to this condition, which at once must be recognized as a most important complication of ileus. Erdmann has referred to it in his article on "Strangulated Hernia" (*N. Y. Medical Journal*, March 12, 1904).. The contribution on "Intestinal Obstruction" in Vol. IV. of Keen's Surgery, describes the morbid anatomy of the lesion. Kocher's contribution "Ueber Ileus" is to be found in *Mitteilungen aus der Grenzgebeiten der Medizin und Chirurgie*, 1898-1899, Volume IV. Van Zwalenberg has referred to Kocher's work in the *Annals of Surgery*, November, 1907. Reports of operated cases I have been unable to find.

The term "Distension Ulcer" is apt to convey the impression that a considerable amount of pressure and distension are necessary in the production of the lesion. In my cases the distension of the pre-ulcerous stage was not marked—least in the second case (obstruction by obturation), and it is believed that the fermentative processes under bacterial influences are the most important factors. The actual perforation in my cases took place rapidly and prior to the possible formation of any considerable distension and he would, therefore, while not denying this as one of the necessary and constant conditions in the production of the lesion, attach a lesser degree of importance to "distension" *per se* than is implied in the term "distension ulcer." A "distension ulcer," for example, might easily be understood to be a result of a distended intestine's inability to withstand an inward pressure, when in reality the lesion is a more complicated process. It is the result of more than a bursting or *over* distension. This term most likely arose from the fact that in animal experimentation, distension was the most striking accompanying condition. But it is clear that it is impossible to produce experimentally the exact conditions present in clinical cases. With a view of obviating that which is misleading in the older term from a clinical point of view, I would suggest the term *"Proximal Ulceration of Intestinal Obstruction"* when referring to these lesions. Such a designation is sufficiently comprehensive and in the suggestion I merely associate the lesion as a complication instead of attempting to make it descriptive and incorporating one etiological factor, as in the hyphenated term of Kocher. "Proximal Ulceration" would still be a fitting designation whatever be the finally accepted views as to the etiology.

In conclusion, I would emphasize the single point of the importance, in our cases of hernia with acute symptoms, of making careful inspection of the intestine above the site of compression or strangulation. Reports of clinical cases will add to our knowledge of the subject.

104 EAST THIRTY-FIRST STREET.

SYPHILIS VS. TUBERCULOSIS OF THE LARYNX.

The character of the voice will aid in the diagnosis. In tuberculosis the voice is weak, often a mere whisper, but in syphilis the voice is strong but hoarse. The cough of phthisis is more troublesome and characteristic than the syphilitic cough; the expectoration is more profuse, and complete aphonia, which is common in tuberculosis and sometimes comes on comparatively early in the disease, is quite rare in syphilis. The pain in advanced cases of tuberculosis of the larynx is much greater and more distressing than in a case of syphilis.—HENRY PARRISH, in *The New York Medical Journal*.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, OCTOBER, 1910.

SPOROTRICHOSIS.

The literature of the past year demonstrates that sporotrichosis is no longer to be regarded as a pathological curiosity, but as a disease sufficiently common to be encountered by any surgeon or dermatologist. While most of the cases have been seen in France, and to France (de Beurmann and his collaborators) we owe a complete description of the disease in all its clinical, mycological and therapeutic details, cases have been published in other countries and, indeed, the first two recorded cases were in America (Schenck, 1898; Hektoen and Perkins, 1900).

Usually, sporotrichosis is a non-fatal, subacute or chronic, painless, afebrile affection, curable by the administration of iodides in fair doses. It attacks chiefly the skin and subcutaneous tissues, producing disseminated suppurating nodules or large abscesses, "gummata" and ulcers, having varied but peculiar features, and sometimes infiltration of the lymph channels. Next to the skin, the bones and joints are most often invaded; and the muscles, the upper air passages, the eyes and the epididymis are sometimes attacked. Occasionally there develops an acute general infection (sporotrichemia) with pyrexia, violent pains and prostration.

Sporotrichosis is most apt to be mistaken for tuberculosis or syphilis of the bones and skin, but it may resemble several other skin affections, as blastomycosis, furunculosis, erythema induré, etc. In making the diagnosis it is, perhaps, most important to bear sporotrichosis in mind when confronted with persistent, multiple, suppurating or ulcerating skin lesions, especially if associated with discharging bone sinuses. The sporotricha can be demonstrated by cultivation on the proper media if, especially, the culture is made from pus in a freshly opened lesion.—W. M. B.

LYMPHANGIOPLASTY.

Chronic lymphedema caused by cancerous infiltration or resulting from infection—and especially the painful "brawny arm" so often associated with, or following radical operation for, carcinoma of the breast—constitutes a set of conditions that have cried aloud, and usually in vain, for adequate treatment. As an effort at cure or relief of the brawny arm of cancer, W. Sampson Handley described two years ago (*Lancet,* March 14, 1908) his operation of "lymphangioplasty." It consists in making artificial lymph channels by the subcutaneous introduction of long threads of tubular woven silk, through the edematous tissues, terminating above in the shoulder and the back.

This procedure was not a mere unsupported and freakish mechanical effort; it was based upon, and, indeed, suggested by, Handley's studies of carcinomatous tissues. In spite of this and in spite of the fact that in his recent Hunterian Lectures on The Surgery of the Lymphatic System (*British Medical Journal,* April 9th and 16th, 1910) Handley records several cases of brawny arm in which his lymphangioplasty effected excellent results, his operation has attracted but little attention in surgical literature, and, in this country at least, there are several surgeons who are not even familiar with it. It seems worth while, therefore, to call attention again to a procedure by which there can be afforded a large measure of relief in at least some of those distressing cases which all surgeons are accustomed to see.

We would utter two precautions to those who wish to perform lymphangioplasty: first, that they acquaint themselves thoroughly with the principles on which it is based and the technic by which it is employed (especially the aseptic handling of the long threads), and, second, that they do not apply it indiscriminately. As Handley himself suggests, the largest measure of disappointments will arise from the attempt to apply lymphangioplasty in cases in which local or general conditions forbid it. While Handley's results seem to establish the operation, further experiences may, and probably will, develop new principles and modifications. Lymphangioplasty should be regarded as a pioneer

effort, to be patiently tried out and studied, and not cast aside with the first failure.

In two cases of (so-called) elephantiasis of the lower extremity lymphangioplasty failed of permanent result, and Handley concludes from these that the operation is probably useless in all lymphatic edemas of the lower limbs—because, he thinks, of "the strenuous opposition of gravity." This may well be so, but two cases are not sufficient to demonstrate it, and lymphangioplasty is worth a further trial in the lower extremity.

Before attempting the introduction of the silk threads in any case it is important to rid the tissues, if possible, of any infection. In some cases of chronic lymphedema of the legs (elephantiasis-like in appearance), and more especially those resulting from erysipelas, there is probably a chronic bacterial infection (lymphangitis). This, indeed, was shown to be the case (micrococci in the blood and in the leg) in one of Handley's cases in which suppuration made it necessary to withdraw the threads. (After vaccine treatment a second introduction was followed by aseptic healing.)

In passing, Handley is hardly justified, on the basis of one case, in advancing the theory, albeit not unsupported by his quotations from other observers, that true elephantiasis is not due to infection by the filaria Bancrofti, but may result from infection by a micrococcus alone (staphylococcus albus in his case), or from a mixed infection by filariae and micrococci.—W. M. B.

PEDIATRIC SURGERY.

In an historical note on the literature of pediatric surgery* suggested by the then recent appearance of Samuel Kelley's "Surgical Diseases of Children," we discussed the question of a need for specialists in such a branch of surgery. In this connection it is interesting to note that the report of the sub-committee on curriculum presented at the meeting of the Association of American Colleges, held in Baltimore in March, placed the minimum number of hours to be devoted to pediatrics at 150, which is an increase of fifty per cent. over the present requirement of the Association, and yet is a very modest share of the 4,000 hours of the clinical years (the third and fourth) of the college course; and the committee (of which, to be sure, Prof. Kelley was himself the pediatric member) stated further in its report that, as with pediatrics and general medicine, " . . . . pediatrics and surgery touch and overlap. In one subject or the other the surgery peculiar to children should receive attention."

* Editorial, August, 1909.

Surgical Suggestions

An hypertrophied prostate in which nodules can be felt per rectum is carcinomatous.

In "clean" surgical cases a rise of temperature to even no more than 99.5° or 100°, during convalescence after operation, always means something—it may be only serous retention.

A uniform enlargement of one buttock, developing spontaneously and not of subcutaneous origin, is probably due to a subgluteal lipoma. Here, too, however, a hydroma must be thought of.

A psoas abscess occasionally points in the outer part of the groin (i. e., close to the anterior spine of the ilium). When there is no evident spinal deformity to suggest the diagnosis the swelling is apt to be mistaken for a growth.

Chronic ulcers of the face situated in the area between lines drawn from the outer end of the eyebrow and the upper border of the ear above, and the angle of the mouth and the lobe of the ear below, are usually epitheliomata of the basal-celled variety and they are comparatively non-malignant.

SCIENTIFIC COMMUNICATIONS.

CURRETTAGE AND CAUTERIZATION IN THE TREATMENT OF CHANCROIDS.

The article by Pedersen and March on this subject in the July number of THE AMERICAN JOURNAL OF SURGERY is of much interest to me, for I have used a similar method for the last fifteen years with perfect results. The method was taught by Dr. Wm. Phipps Munn (now deceased), professor of genito-urinary diseases in the Denver Medical College, in 1895. It is as follows:

General or local anesthesia is used according to indications. The parts are thoroughly cleansed with an antiseptic solution, then with a sharp spoon every sore is curretted down to healthy tissue. Each cavity is next swabbed with a 1 to 100 bichloride of mercury solution and then covered with a moist antiseptic dressing.

Of late I have used stronger solutions, at times using the sublimate tablet to cauterize the sores. I have never yet had a case in which repetition was necessary. In five to seven days the sores are clean and healing.

I do not pretend to say that this is a better treatment than that outlined by Pedersen and Marsh, but I do claim that there is less danger of destroying healthy tissue than by using nitric acid.

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Surgical Sociology

By Ira S. Wile, M.D.
Department Editor.

According to the casualty list of the United States Geological Survey, there were 2,412 deaths from coal mine accidents during the year 1909 exclusive of the 393 deaths in the Cherry catastrophe. The list of the injured totals 7,979. For the ten years previous to 1907, there were 8,355 fatal accidents and 19,755 non-fatal accidents in the coal fields of Pennsylvania. The rate of fatal accidents in the anthracite mines was 3.18 per mille employees while the rate in the bituminous fields was 2.77 per mille.

This fearful grist of dead and wounded was not exchanged for the glory of patriotic defense, to be compensated in part to the families of the fallen through the medium of a more or less worthy pension. The carnage mentioned occurred in the industrial battle to get gold out of coal mines. Those who buy the coal bear a small part of the cost of paying casualty companies to indemnify the operators against loss from suits for damages. Men are cheap and their cost to the company can all come out of the price of coal. But who pays for the loss of the men in the homes where men are far from cheap? Society pays.

Mr. Gompers, writing editorially on "The price we pay" (*American Federationist*, August, 1910), says: "The 'WE' in this instance is our country—its wage earners in the foreground. What we pay a price for is 'our' industrial success." The price of industrial accident is borne only in small part by the wage earner. The real price lies in a form of social subsidy by virtue of which industrial accidents are permitted to occur while a few pocket the gain and society pays the losses. Our country pays the price in various ways and the cost of a single accident cannot be summed up in the monetary compensation that perchance may fall to those surviving the victim of industry.

The cost of hospitals, dispensaries, convalescent homes, ambulance stations, forms but one item chargeable to the accident. What is the economic cost of widowhood? The inter-relation of the juvenile court system and industrial accident is not apparent until one appreciates the study of Miss Breckenridge on the subject. From an investigation of the Chicago Juvenile Court records of 11,328 boys and 2,770 girls, she found that 23 per cent. of the boys were fatherless and 25 per cent. of the girls lacked paternal guidance. The cost of delinquency is increased and society pays.

The sudden loss of the wage earner means the lowering of the educational standards of the community owing to the necessity of the children leaving school at the earliest possible opportunity in order to enter upon a career that will supplement the small income of the widowed mother. Truancy increases and the cost of the truant officers and the truant school can be charged to the causative factor, the already forgotten accident. Society pays.

The accident casts upon the shore a number of industrial derelicts who fall into a state of uselessness. The blind, the lame, the deaf, the maimed are no longer independent. Semi-dependency becomes their state and the community rushes to their support. Later in life, almshouses, institutions for dependents must be supplied in order that the burdens may not be too heavy upon private philanthropy. Society pays.

The day nursery and the orphan asylum must not be forgotten in weighing the cost of industrial accidents. And all this cost is merely placed upon society by the injustice of industrial accidents.

Mr. Sherman Kingsley in considering the compensation of the families of fifty men who were killed in single fatalities adduces some suggestive figures. The average money compensation secured by the surviving family was $178.45. The average annual income previous to the fatal accident was $700. After the accidental death the family income from all sources amounted to $255, a decrease of 65 per cent. The average family considered by him consisted of a widow and four children. How could those families live? Their support fell upon the community as its share in the social subsidy of a most unprofitable industry,—the sacrifice of strong men beneath the wheels of the industrial Juggernaut.

The value of the mortality statistics of the United States is unfortunately not as clearly defined as the figures supplied by almost all other civilized countries. Full mortality returns are secured from about one-half of the total population of the country. A lack of uniformity in gathering the vital statistics even in these states, where such an effort is made, and the confused nomenclatures that are used further impede the compilation of reliable statistics. The summary of mortality statistics as published by the Bureau of the Census, now includes the records of seventeen states, the District of Columbia, and seventy-four registration cities in other states that have not yet accepted a satisfactory system of registration. The total population represented in the figures approximates 51.8 per cent. of the estimated population of the country.

According to the Ninth Annual Report of the Bureau of Census, covering the year 1908, the proportion of deaths due to violence was 7.6 per cent. of the total deaths returned. The percentage of the deaths from violence due to accidental causes was 78.4 per cent. This represents a fall from 82 per cent. in 1907. The annual average for the years from 1901 to 1905 was 84.2 per cent. This decrease of the number of deaths due to accidents may not be as real as apparent. The lack of care in returning accurate information, the apparent indifference in securing the details that are so essential in compiling the mortality statistics make it very difficult to authoritatively tabulate the returns from all sections of the registration area. The more effort that is taken to secure correct diagnoses the more variation there will be in the figures for a few

years. When, however, all physicians, coroners, factory inspectors, hospitals, and corporations in the cities, states, and the nation, unite in an endeavor to secure the truest mortality statistics possible, the casualty mortality figures will be absolutely dependable. Accurate vital and mortality statistics are the basis of definitely demonstrating the improvement in conditions of living and of the sanitary and social progress of the country.

Book Review

Hookworm Disease. Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment. By GEORGE DOCK, A.M., M.D., Professor of Theory and Practice of Medicine, Medical Department, Tulane University of Louisiana; and CHARLES E. BASS, M.D., Instructor of Clinical Microscopy and Clinical Medicine, Tulane University of Louisiana. Octago; 250 pages; 49 illustrations. St. Louis: C. V. MOSBY CO., 1910.

This noteworthy contribution to the study of parasitic diseases will prove of practical value not only to physicians, but also to sanitarians and employers of labor in that wide range of United States territory extending from the Potomac River to Florida and Texas. The authors mention thirty-one synonyms of hookworm disease, which attest to its long existence, its diverse manifestations and its extensive geographic distribution. There are chapters devoted to its history, economic importance and zoologic features.

Hookworms are strongylidae, one of the seven families of nematodes. The new-world hookworm or uncinaria Americanus has anatomic features distinguishing it from the ankylostoma duodenale or old-world hookworm; developmentally, however, the two types are similar. While capable of entering the skin of the lower animals, the larvae of the human types do not reach the adult or reproductive stage in these animals, which are, nevertheless, infected by separate species of uncinariae. The ova become infectious only with suitable warmth, moisture, shade and dilution of the feces with sand, dirt or other material. With such favorable conditions present for twenty-four hours microscopic larvae begin to crawl about the feces and within three days the larvae shed their skins. In five days there begins a second stage of development in which the larvae become encysted and are no longer killed by sunlight, changes of temperature and excessive dilution. One of numerous experiments cited to prove that infection takes place through the skin is that of Loos, who placed drops of water heavily infected with larvae on the arm of a man whose feces had been found free from ova. There soon developed a dermatitis similar to the "ground itch," and the next day there was considerable swelling, which disappeared in a week. In seventy-one days ova were found in the stools.

Hookworm disease occurs chiefly in those rural districts in which there is no sanitary disposal of feces. Deposited in the bushes, gullies or in privies buiit on the hillside or open at the back, infected feces are washed away by heavy rains or are scattered by domestic animals to ditches or small streams. Ground itch frequently develops in the barefooted children who in warm weather play or wade in these infected streams. Contributory etiological factors are high temperatures and moisture; in tropical or subtropical regions those who have intimate relations with the soil,—miners, brickmakers and plantation hands,—are especially prone to infection. Investigations are quoted showing that negroes, millworkers, southern recruits in the army and medical students are infected to an appalling extent, though these "carriers" may give no symptoms of the disease. At Tulane University, for instance, examination of students from various parts of the state of Louisiana showed 20 per cent. to be hookworm carriers.

The exact relationship of the hookworm to the various pathological changes characterizing the disease is not yet well understood. It is known, however, that the worm bites into the wall of the small intestine, draws the mucosa into its esophagus and causes bleeding by erosion of blood vessels. Post mortem the mucosa shows hemorrhagic spots, in the center of which the head is often found buried, and in many instances half of the body of the worm as well. In a severe case one thousand to four thousand worms are found in the intestine.

The symptomatology in the various arbitrary types of the disease is given in detail, and carefully described are the circulatory, respiratory and digestive disturbances as well as the characteristic dermatitis and perversion of appetite. The blood changes are those of a secondary anemia plus an eosinophilia, the latter being ascribed to a toxic action by the worms. Among laymen in infected localities the belief is common that "dirt eating" or "trash eating" is the cause rather than a result of the disease and infected children are often falsely accused of and unjustly punished for dirt eating. The authors condemn the tendency to write jokingly in the newspapers about the "lazy disease," saying that if the same amount of energy and space had been devoted to dissemination of knowledge of the sources and the prevention of the disease, it would be much less prevalent to-day.

In order to make an absolutely positive diagnosis worms or ova must be found in the feces; a detailed and explicit description of the technics for microscopic examination of feces is given. In severe cases eggs can be found in every microscopic field.

The sanitary problems involved in hookworm eradication are ably discussed. An elaborate sanitary organization is required for proper prophylaxis, which would consist: *first*, in destroying the mature worms in the intestine of patients in order to check the supply of eggs at the source; *second*, in preventing the growth of larvae in places where they develop; *third*, in preventing infection by larvae where they have developed in spite of the above measures; and *fourth*, in discovering hookworm carriers and rendering them innocuous.

The final chapter deals with the treatment of uncinariasis by the administration on a fasting stomach of thymol in conjunction with purgatives.

Accidental Injuries to Workmen with Reference to the Workmen's Compensation Act, 1906. By H. NORMAN BARNETT, F.R.S.C., Surgeon, Cripples' Home, Belfast. With article on injuries to the organs of special sense by CECIL E. SHAW, M.A., M.Ch., M.D., Lecturer on Ophthalmology and Otology, Queen's University of Belfast, etc.; and legal introduction by THOMAS J. CAMPBELL, M.A., LL.B. Small octavo; 376 pages. London: REBMAN, LIMITED; 1909. Price, 7 shillings, net.

The authors have supplied a much needed volume, as there have been very few works treating in an authoritative manner of the celebrated English Workmen's Compensation Act of 1906. The division of the literary labors has not destroyed the unity of the theme but has resulted in strengthening the value of careful analysis and discussion of the numerous medical and legal phases of this most vital subject. At the present time, when the questions of employers' liability acts are receiving ever-increasing attention, a study of the various features of the English bill is extremely enlightening and suggestive.

The legal introduction is commendably clear and to the point. It takes up seriatim the legal terms of the act and makes their meaning perfectly plain. A study of these 52 pages shows in how much the successful operation of the act depends upon the earnest and conscientious cooperation of the physicians and surgeons of the country having similar liability acts. The questions of the necessity of an operation and the degree of risk attendant thereon form an important phase in the consideration of the adjudication of compensation to an injured workman.

To realize the difficulties of definition, after reading the first chapter on "What Constitutes an Accident," one still wonders whether apoplexy is or is not finally classified within the provisions of the act.

Chapter II gives a brief analysis of the act, freeing it

from all the verbal dross usually characterizing a quasi-legal analysis.

The "effects of accident on those predisposed to or suffering from disease" are carefully and thoughtfully discussed in twenty-four pages. Tuberculosis, syphilis, alcoholism and gout present grounds for serious discussion as to their effects upon injuries and their predisposition to numerous unfortunate consequences of what would otherwise be merely simple accidental injuries.

The forms used in reporting injuries are illustrated and with them is given some sane advice as to the proper method of ascertaining the surgical facts in individual cases.

"Industrial diseases as accidents" forms a splendid chapter, considering the symptoms and diagnosis of the many diseases that are regarded as being truly dependant upon special industries. Arsenical poisoning, caisson disease, lead poisoning, phosphorus necrosis, potter's rot, shoddy fever and many others come in because they are scheduled in the act.

There are special chapters given over to a discussion of the clinical features of injuries to bones, joints, muscles, tendons and bursae and bloodvessels. The special interest in these pages lies not in the surgical or medical aspects described but in the legal relations that are involved in accurately determining the diagnosis and prognosis.

"Injuries to organs of special sense," "injuries to internal organs," and "injuries to the nervous system" are treated in a manner that is strikingly lucid and enlightening. The relation of occupation to the different types of injury is amply shown, though the chapters are by no means meant to be enclycopedic. Just enough and well done, is sufficient to characterize each of these chapters.

By all precedents the appendices should merely be mentioned as existing, but the three appendices that complete this book are too valuable to thus pass by. Appendix A gives the full text of the Workmen's Compensation Act of 1906 (31 pages). Appendix B comprises a list of industrial diseases with their definitions. Appendix C consists of the Report of the Departmental Committee on Compensation for Industrial Diseases, requiring 50 pages to place it before the readers in its entiretv. The report is well worth the section of the book it takes up.

The publishers are to be congratulated as well as the authors for the mechanical features of the book. The work is a valuable addition to the few volumes of reference upon the subject of workmen's compensation and industrial accidents.

Diseases of the Heart and Aorta. By ARTHUR DOUGLASS HIRSCHFELDER, M.D., Associate in Medicine, Johns Hopkins University, with an Introductory Note by LLEWELLYS F. BARKER, M.D., L.L.D., Professor of Medicine, Johns Hopkins University. Large octavo; 632 pages; 329 illustrations by the author. Philadelphia and London: J. B. LIPPINCOTT Co., 1910.

Our knowledge of the heart and of its diseases, though still in its infancy, has received a tremendous impulse in the last few years because accurate laboratory and clinical methods of investigation, by aid of precise apparatus, have replaced former more haphazard modes of research. In consequence of this change, almost daily additions to our knowledge occur. Hirschfelder's book, which offers a well systematized view of what is known at the present time, is therefore a welcome and timely contribution. The author, who is both a laboratory worker and a clinician, is in a favorable position to correlate these two, as yet independent branches, and has in his book succeeded in doing so.

The volume is divided into four parts. Part one deals with general considerations, such as physiology, blood pressure, arterial and venous pulse, electrocardiograms, *x*-ray and physical examination. Part two contains the diffuse pathological processes—overstrain, its pathological physiology, general symptoms of cardiac disease, general principles of treatment, effects of drugs, gymnastics and hydrotherapy; and the non-localized diseases, such as fatty heart, arterio-sclerosis, etc Part three is devoted to valvular lesions, heart block, pregnancy and labor in heart disease, wounds of the heart, aneurism, etc. Part four contains a description of the functional cardiac diseases—paroxysmal tachycardia, thyroid heart and miscellaneous disturbances.

The text is clear and concise; the relative importance of the various contents is made recognizable at a glance by the judicious use of large and small type spacing, etc. The new methods of investigation and use of apparatus are described with unusual lucidity. Especially to be commended is the lavish employment of diagrams and graphic records in preference to long-winded descriptions. The illustrations throughout are good, and with few exceptions are prepared especially for this book by the author. Some, however, have suffered in clearness and value from too great reduction in size. The numerous questions still mooted, or subject to various interpretation, are presented in a clear and impartial manner. The difficult task of bridging the gap between experiment and practice has been successfully performed. Therefore this book will be welcome both to the general practitioner, who is being forced to take cognizance of the newer methods of heart diagnosis, and to the student and specialist. The bibliography at the end of each chapter will be found of service to those interested in pursuing special phases of the subject.

The Optic Nerve and the Accessory Sinuses of the Nose. A Contribution to the Study of Canalicular Neuritis and Atrophy of the Optic Nerve of Nasal Origin. By PROF. A. ONODI (University, Budapest). Member of the Hungarian Academy of Sciences; Honorary Member of the American Laryngological, Rhinological and Otological Society, and of the Italian Society of the Ear, Nose and Larynx, etc., etc. Authorized Translation by J. LUCKHOFF, M. D., Elin., Ch. B. (Cape Town). Octavo; 101 pages; 50 illustrations. New York: WILLIAM WOOD & COMPANY, 1910.

The relations of the accessory sinuses of the nose to the optic nerve are so important that we welcome this small volume which contributes so much to the subject. Prof. Onodi is renowned for his careful and tireless investigations and this volume is but another example of his zeal.

The first section of sixty-eight pages deals entirely with the topographical anatomy of the accessory sinus, the optic nerve and the orbit. Herein are forty-nine illustrations (photographs) of natural size, of the various parts described in the text. The author describes twelve groups of cells in relation to the optic nerve, a grouping derived from the study of a number of anatomical specimens. For example, the relation of the sphenoid cells, ethmoids, etc., to the sphenoid bone and optic nerve are well described. A study of the photographs themselves will well repay the student of rhinology.

Part II deals with "Clinical Considerations." Here are described the various diseases of the eye, optic nerve and sinuses in relation to each other. One finds that the posterior ethmoid cell is a very important part and that the etiological factors in a great many diseases heretofore unexplained are readily recognized. A very complete bibliography follows the references in the text. The author says: "In addition to the difficulty sometimes present, of discriminating whether in associated nasal disease and visual disturbance, the nasal disease is the cause of an optic lesion, we have yet the other possibilitv to bear in mind—namely, that an optic lesion may be due to accessory sinus disease, and yet the accessory sinus disease produce no visible intranasal suppuration. Such latent empyemata can only be revealed by operative exploration."

We commend this translation to careful reading.

The Care of the Child. By MRS. BURTON CHANCE. Duodecimo; 242 pages. Philadelphia: THE PENN PUBLISHING CO., 1909.

Mrs. Chance has produced an admirable guide for mothers. It aims to give definite ideas on how to do the little things that are so necessary to safeguard children. Not alone the physical side of the child is considered but its mental training and moral development are also briefly discussed.

Progress in Surgery

A Résumé of Recent Literature.

Isolated Paralysis of the External Rectus in Acute Suppurative Otitis Media. WILLIAM HARDIN SEARS. *The Pennsylvania Medical Journal,* August, 1910.

The location of the lesions may be classified naturally into nuclear and fascicular, basal and orbital.

Nuclear and Fascicular. Involvement of both nuclei supplying the sixth pair of nerves will cause a bilateral paralysis of the externus. Involvement of the nucleus on one side, it is generally believed, causes not only paralysis of the external rectus but also conjugate paralysis.

Fascicular. Lesion of the root fibers between the nucleus and emergence of the nerve trunk at the lower border of the pons may arise simultaneously with hemiplegia of the opposite side, causing a crossed paralysis. This is due usually to hemorrhage. The same form of paralysis may be due to tumors of the pons.

Basal. In its course at the base of the brain, the abducens nerve is more likely to be affected by external influences than essential disease of its own structure. The principal one is pressure. This may be due to hemorrhage, exudation in meningitis, new growths of the pons, the cerebellar fossa and petrous bone. Tumors of the cerebrum as well as the cerebellum growing toward the base may produce it, as a distant symptom, owing possibly to the peculiar liability of the nerve to pressure as it winds round the margin of the dorsum sellae. Tumors of small size and slow growth may produce it by direct pressure. Traumatism is also an important factor, fracture of the base being particularly likely to affect this nerve, from its intimate relation to the apex of the petrous bone. It is admitted that fracture of the base may occur in which the only symptom is isolated paralysis of the external rectus.

Orbital. At the entrance to the orbit all the ocular nerves are so intimately related that all are likely to be involved in disturbance at that point, rendering an isolated palsy unlikely. In the orbital cavity also the paralysis of the ocular nerves is likely to be generalized but we frequently meet with isolated palsies. These may arise from local cellular inflammation. Tumors of small size and traumatism, such as blows or falls, local inflammation of the muscles or of the nerve from exposure to cold may result in the so-called rheumatic palsies.

The writer has found reports of several cases of paralysis of the abducens with middle ear suppuration.

Koellner, of Berlin, in a report of 257 cases of paralysis of the external rectus, isolated in 107 cases, and associated with paralyses of other of the extraocular muscles in 150 more, found it due to ear disease in two cases.

While the occurrence of abducens paralysis as a result of acute ear disease seems positive, the exact pathological relation is not so clear, authorities differing somewhat in their opinions as to the manner of its causation. That oculomotor palsies, in this connection, are reflex is a theory advanced to explain some cases.

Schwabach has reported a case in which pressure over an inflamed mastoid caused oculomotor disturbance. Pfleuger reported two cases, one in which removal of an aural polypus caused it and a second where it arose during forcible syringing for removal of impacted cerumen.

An abscess of the temporal lobe, otitic in origin, may very rarely produce it by pressure. This cause, however, more often affects the third nerve.

Peyser, of Berlin, reports a case in which a subperiosteal abscess of the temporal fossa developed during an acute purulent otitis media, with abducens paralysis of the same side. After evacuation of the abscess, the paralysis gradually improved. He ascribes the paralysis, however, not to the abscess, but to propagation of the infection through the external soft parts into the orbit. That they are of the nature of infectious neuritis, due to toxins engendered by the suppurating ear, has been suggested.

Some cases have been reported in which the paralysis seemed to depend upon the direct extension of an infectious lesion.

Arnold Knapp reported the association of a paralysis of the external rectus with an acute suppuration of the middle ear. He believed the paralysis to be due to the involvement of the Gasserian ganglion and the sixth nerve at the apex of the petrous pyramid and that extension of the purulent process was along the cancellous bony tissue, surrounding the osseous labyrinth or through the carotid plexus.

A True Papilloma of the Nasal Septum. RUFUS B. SCARLETT. *The Pennsylvania Medical Journal,* August, 1910.

True papillomata of the nasal septum are rare. Such a growth shows profuse epithelial cell proliferation, slender stalks of connective tissue and an absence of mucous glands. The location of these tumors is more or less constant. They are usually found over the cartilaginous portion of the septum, close to the vestibule and varying from the size of a pea to that of a small orange. Harris cites a case where there was a papillary growth springing from the septum, floor of the nose and the anterior portion of the middle turbinate. Mackenzie reported a case of diffuse papillomatous degeneration, in which the mucous membrane of both nostrils was studded throughout by numerous sessile growths varying in size from a pin-head to a grain of rice.

There is a great deal of uncertainty as to the etiology of these growths. Injury from a blow or picking the nose has been ascribed to some cases.

The symptoms as a rule are not marked. More or less nasal obstruction, sometimes epistaxis, and some discharge may occur. Pain is unusual.

The gross appearance of these tumors is more or less distinctive, being of a cauliflower type. A positive diagnosis should never be made without the aid of the microscope. The chief points of difference between the true papilloma and turbinal hypertrophy or polypoid growth are that in the former, there is cell proliferation with a scanty stroma, showing poorly developed bloodvessels.

The majority of these growths show little or no tendency to return when once they are thoroughly removed. The removal is easily accomplished by the cold wire snare, scissors, septal knife or cautery. Two cases are reported.

The Bronchoscopic Treatment of Bronchial Asthma. HENRY HORN, San Francisco. *Journal of the American Medical Association,* September 10, 1910.

The use of bronchoscopy for other purposes than the removal of foreign bodies is comparatively novel. Horn gives a detailed report of a case of bronchial asthma studied and treated by this method, which had been used previously in 5 cases of the disease reported by Notowny and Galebsky, which are briefly reviewed. In his case there were made 5 separate bronchoscopies during a period of several months. The work was done in the University Laryngologic Clinic in Bonn, Germany. The case was complicated by hysteria, tuberculosis and severe accessory cavity disease, and the attacks were of great severity. The patient had been obliged to use morphin for years. The first bronchoscopy gave relief by withdrawing an enormous quantity of mucus. The subsequent treatments appeared to give relief, more than the first, through the dilatation and the spraying with cocain employed. The author concludes that the asthma in this case at least was a nervous reflex affection and that cocain exercises here an effect analogous to its favorable action when applied locally in the nose during an attack of dysmenorrhea. Combining and comparing his results with those of Notowny and Galebsky, he feels justified in drawing the following conclusions: "1. It is possible in a young adult to have an almost complete closure of a main bronchus, due to a tonic cramp. 2. Notowny's conclusion that the theory of bronchial spasm is false is disproved in this case. 3. The complete cures in some cases and the long period of relief in this case seem to indicate that the treatment of spasmodic asthma by the methods elaborated in this paper is worthy of more extended investigation and should be given a trial when all other methods have proved of no avail. 4. There seems to be no bronchoscopic picture characteristic for an attack of

spasmodic asthma. We may have normal mucous membrane, spasms and contractions of the large and small bronchi and redness and swelling, alone or combined in the same case. 5. Tuberculosis, heart disease, slightly scoliotic spine, great weakness and age seem to offer no contraindication to the use of this method."

A Safe Intranasal Method of Opening the Frontal Sinus. JOHN A. THOMPSON, *The Laryngoscope*, August, 1910.

The method devised is to remove the anterior end of the middle turbinate and then pass a probe into the frontal sinus after injecting cocain to secure anesthesia. Instead of chiseling away bone in front of the probe a pointed rasp with a groove in the back, so that it fits neatly and snugly over the probe, is guided up along the nasofrontal duct as far as it can be pushed by a reasonable pressure and then withdraw, cutting away the bone downward and forward. By a repetition of this movement, inserting the rasp into the duct higher and higher each time, as the resistance is lessened by cutting away the bone, it is possible to work through into the frontal sinus within a very few minutes and with practically no pain to the patient. The bone is softened by the suppurative inflammation until its removal is very easily accomplished. As soon as the frontal sinus is opened, different sized rasps, currettes or forceps can be used to cut away all of the diseased bone in the anterior ethmoid cells without destroying the mucous membrane on the posterior wall of the nasofrontal duct. With a portion of the mucous membrane left in its natural position and with its nutrition unimpaired, no drainage tube is necessary and the free opening into the frontal sinus heals quickly.

The Isthmus of the Eustachian Tube. A Contribution to the Pathology and Treatment of Middle Ear Disease. SIDNEY YANKAUER, *The Laryngoscope*, July, 1910.

In chronic catarrhal conditions of the middle ears, the mucous membrane of the middle ear is swollen and thickened. A slight amount of thickening in the cartilaginous portion of the tube will not interfere seriously with the ventilation of the middle ear, as the cartilage is yielding and the tube is actively opened by muscular contraction; but in the narrow part of the unyielding bony canal, just to the outer side of the isthmus, the slightest amount of swelling will cause obstruction. The only method which has been known up to the present time for applying cocain or adrenalin or both to the tubal mucous membrane, consists in injecting the solution into the catheter and blowing it into the tube. When there is obstruction in the tube, it is almost impossible to accomplish this result at all; with the use of a Eustachian applicator this procedure becomes at once simple, easy and certain.

The applicator having been charged with a solution of 5 per cent. cocain and 1-2000 adrenalin is passed into the tube for a distance not exceeding 25 mm. and allowed to rest there for a moment until the solution has had time to take effect. The applicator is then advanced one or two millimeters into the obstruction and again allowed to rest. Advancing slowly in this manner, the obstruction will be found to yield gradually and the tube becomes patent. If the ear has been inflated before the application, and the inflation is repeated afterward, a considerable difference in the sound will be observed. It is possible after this to insert various sized sounds which can be left in place for a considerable length of time. Besides anesthetic applications, the applicators (which are passed through a Eustachian catheter) may be used for passing medicinal agents into the middle ear.

The author has devised a new operation which he calls salpingotomy which is performed via the external ear by means of a suitable knife. Its special use is in long-standing cases of deafness which have not yielded to treatment and in which, by sounding, a stricture is found. This operation consists in cutting a stricture of the tube at the isthmus through an incision made in the drum membrane. Local reaction follows but eventually the opening in the drum heals and the tube can be made to remain permanently open by careful sounding.

A second operation, devised by the author, is the closure of the Eustachian tube in those cases of long-standing suppuration of the middle ear which have not otherwise yielded to treatment: the middle ear and tube are well anesthetized with cocain-adrenalin solution by means of applicators passed through the tube and by direct applications to the middle ear through perforations in the drum. The opening into the tube is located with a salpingeal probe and then a salpingeal currette (with cutting edge at an angle to the handle) is inserted to the isthmus. By means of a rotary and to-and-fro motion the mucous membrane is cut through down to bone and, by withdrawing the currette, some of the frayed ends may be brought out into the middle ear. The parts are covered with some antiseptic powder. The local reaction subsides in about ten days. The author has operated upon twenty-one ears in this manner and in the majority of these cases the discharge has entirely ceased. The author believes that one of the causes of the continuance of the suppuration is to be found in the constant reinfection of the middle ear through the Eustachian tube.

It is a well known fact that there are certain cases of oto-sclerosis in which the hearing is improved when a perforation is made in the drum membrane. Lucal states that benefit may usually be expected in those cases in which the defective hearing is accompanied by a negative Rinné test.

Working on this hypothesis and observing that the drum membrane will not allow of a permanent opening while the Eustachian tube is patent, the writer operated upon three cases. The drum membrane was removed with a part of the malleus and then the Eustachian tube was curretted so that it would remain permanently closed. All three patients improved considerably.

The author concludes that these cases indicate clearly that the destruction of the mucous membrane of the isthmus of the tube in cases of oto-sclerosis is followed by the same disturbance of the lymphatic circulation of the inner tympanic wall as occurs in suppurative cases, and that when the swelling and transudation passes off, the same desiccation of the mucous membrane occurs. From the fact that these patients not only retained the increase of hearing which immediately succeeded the operation, but that they made additional gains, afterward, it seems to the writer that he is justified in drawing the conclusion that the changes produced in the inner tympanic wall have exerted a direct and favorable influence upon the oto-sclerotic process.

Pathologic Relationship of Ulcer and Carcinoma of the Alimentary Canal. LOUIS B. WILSON and BYRD C. WILLIS, Rochester, Minn. *Journal of the American Medical Association*, September 10, 1910.

In the alimentary canal, whatever the essential irritant may be, micro-organisms, ferment, or what not, in a very high percentage of cases there is microscopic evidence backing up clinical evidence that the carcinomata develop on epithelial cells which have been previously isolated from their normal surroundings, either by the formation of diverticula, or being cut off by scar tissue in ulcer bases. Evidences of previous isolation were found in 30 per cent. of cancers of the lip, 67 per cent. of gastric cancer, 33 per cent. of gall-bladder cancer, 100 per cent. of cases of cancer of the appendix, 10 per cent. of cases of cancer of cecum, 40 per cent. of colon cancers, and 31 per cent. of cancer of the rectum. The clinical bearing of this is the importance of the recognition and cure of all diseases that isolate epithelium. Chronic ulcers of the mouth and stomach should have the most minute attention. The obliterating appendix should invariably be removed, and diverticula in any portion of the intestine should be treated by complete removal rather than by drainage of the abscesses that may be formed about their ends. The conclusions of their paper are given as follows: "1. The relationship to cancer of simple chronic irritation of the unbroken free surface of the mucosa of

the alimentary canal, as indicated by clinical data, is not readily demonstrable pathologically. 2. Scar tissue at the bases of ulcers and obliterations of the lumina of appendices and diverticula segregate portions of mucous epithelium from the neighboring epithelium and from the lumen of the alimentary canal. 3. These portions of segregated mucous epithelium tend (a) to degenerate from pressure and diminished blood-supply, and (b) to proliferate and infiltrate the surrounding tissues, thus forming cancer. 4. These islands of segregated epithelium should be probably regarded as points of least resistance only, and requiring the presence of other factors for the production of carcinomata."

Bone Suture with Strips of Fascia. (*Knochennaht mit Fascienstreifen.*) C. RITTER, Posen, *Zentralblatt für Chirurgie,* August 20, 1910.

In order to obviate the disadvantages of foreign material for bone suture, Ritter recommends strips of fascia taken from the thigh. In a case of fracture of the surgical neck of the humerus, a perfect result was obtained when this form of suture was used. The fascial strips are passed through holes in the bone and after being tightened are sewed to the periosteum.

The Treatment of Ectopia of the Bladder. Conversion of the Resected Cecum into the Bladder and the Appendix into the Urethra. M. MAKKAS, Bonn, *Zentralblatt für Chirurgie,* August 13, 1910.

This ingenious operation consists, briefly, in the following steps:

1. Resection of the cecum and implantation of the ileum into the transverse colon.
2. Appendicostomy at the lower angle of the incision.
3. The cecum is irrigated daily through a catheter introduced into the appendix.

At the end of a month the second operation is performed.

4. Implantation of the ureters and a small area of bladder around the ureteral openings into the cecum.

The author reports a successful result in a 12-year-old child. The new bladder had a capacity of 300-325 c.c.m. and was emptied by the catheter every three or four hours. The urine did not leak through the appendix owing to a valve formation at its upper end.

The Serum Diagnosis of Hydatid Disease. Fixation of the Complement. KENNETH ECKENSTEIN, London, *Lancet,* August 6, 1910.

All observers report that the method of fixation of the complement is an exceedingly valuable method of diagnosis for echinococcus disease. In the author's hands the reaction was positive in six out of seven undoubted cases. The reaction is never positive in cases which are not echinococcus, so that a positive reaction is of more value than a negative one. There are different methods of preparing the antigen; the author employed the fluid obtained from an echinococcus in a sheep.

A New Method for the Demonstration of the Functional Capacity of the Kidneys. (*Ueber Eine Neue Methode zur Prüfung der Nierenfunktion.*) J. WOHLGEMUTH, Berlin, *Berliner Klinische Wochenschrift,* August 1, 1910.

This method is based upon the principle that diastase, a normal constituent of the urine, is diminished when the functional capacity of the kidney is impaired. In order to carry out the test, quantities of urine from each kidney, obtained by ureteral catheterization, are placed in a series of test tubes. The amounts of urine vary from 0.06 to 0.1 c.c. Normal salt solution is then added until each tube contains 1 c.c. of fluid. To this is added 2.0 c.c. of a one pro-mille starch solution. The whole is incubated for half an hour. At the end of this time one drop of a 1-50 normal iodine solution is added to each tube. The amount of fermentation can be approximately detected by the color reaction.

In a series of 50 cases, Wohlgemuth has found that his method agrees fairly closely with the results obtained by the cryoscope, and the phloridzin and the indigo-carmine tests. To his view, the method is more delicate than the phloridzin and the indigo-carmine tests and is quite as delicate as the cryoscopic test. The method possesses the further advantage that it is simple and can be carried out in the office of the general practitioner.

Fresh Animal Serum in the Treatment of Hemorrhage. C. T. BEACH, Hartford, *Yale Medical Journal,* June, 1910.

The author reports eight cases in which the injection of fresh rabbit serum was attended by good results. In three cases (two of jaundice and one of uterine fibroids) the serum was injected as a prophylactic before operation. In the remaining five (two of them hemophiliacs) the serum promptly relieved the hemorrhage.

The serum is easily obtained by exposing the heart of a rabbit, introducing a sterile canula into the left ventricle and receiving the blood in sterile flasks. After allowing the blood to stand at room temperature until a clot has formed, the clot is separated from the walls by a sterile platinum needle and the blood is centrifugalized until a clear or blood-tinged serum remains in the upper part of the tube. The dose for an adult is 30 c.c. subcutaneously. In urgent cases the serum may be given intravenously in doses of 15 c.c.

The Treatment of Gangrenous Herniae Without Immediate Release of the Incarceration. (*Behandlung Gangrenöser Hernien Ohne Sofortige Lösung der Inkarzeration.*) FRIED. HESSE, Stettin, *Zentralblatt für Chirurgie,* August 6, 1910.

The method which Hesse recommends applies only to cases of strangulation in which the contents of the hernia are already gangrenous, with phlegmon in the walls of the hernia and pus within the sac. The usual treatment of such cases, whether by immediate resection, formation of artificial anus, etc., is usually fatal. Hesse's operation consists in laparotomy and the formation of an enteranostomosis between the efferent and afferent loops. The herniae sac is merely opened and drained. A fecal fistula always results, which can be closed by a subsequent operation. In two cases in which this procedure was adapted, the life of the patient was undoubtedly saved.

Congenital Stenosis of the Pylorus. The Report of Three Successful Cases Following Gastro-Enterostomy. Remarks. C. L. SCUDDER, Boston, *Boston Medical and Surgical Journal,* September 15, 1910.

All three cases were in boys, and were apparently well when born. The first symptoms appeared within three weeks, six weeks and two weeks, respectively. The first symptom was vomiting. Associated with the continual and periodic vomiting was loss of weight. "The unexpected persistence of vomiting in a boy baby within three weeks of birth, in a boy baby who has been nursed by his mother, a continuous loss of weight despite careful feeding, the persistence of a palpable pyloric tumor, visible gastric peristalsis,—these are important signs pointing to an obstruction at the pyloric orifice of the stomach."

The author believes that in doubtful cases an exploratory laparotomy is justifiable. The high surgical mortality, in his opinion, is due to the fact that these patients are operated upon when too late.

A Case of Hemorrhage of the New Born Treated by Direct Transfusion. Recovery. F. S. NEWELL, Boston, *Boston Medical and Surgical Journal,* September 15, 1910.

Within 48 hours after birth, the infant vomited and passed per rectum large quantities of blood. The transfusion was done with the aid of the Elsberg canula, an anastomosis being made between the internal saphenous vein of the infant and the radial artery of the donor. The blood was allowed to flow 25 minutes. The hemorrhages ceased promptly after the operation and the little patient to-day is well.

Sporotrichosis. R. L. SUTTON, Kansas City, *Journal American Medical Association,* September 17, 1910.

Five months previously the patient developed a small, red, painless papule on the tip of the tongue which, in a

few days, ulcerated. Despite local antiseptic treatment, the ulcer did not heal and four weeks later another papule appeared at the base of the digit. Thereafter, at intervals of a few days, seven similar papules developed, extending from the thumb to the shoulder. The papules varied in size from a pea to 2 cm. and were painless. The overlying skin was either normal in color or purplish. The ulcerated papules presented a rough appearance with a bright red granulating base. The wall was undermined and surrounded by a very narrow hyperemic zone. One of the larger lesions was incised, the contents planted on culture tubes, and a sporothrix was cultivated. Under potassium iodide the lesions healed within ten days.

Less than a dozen cases of sporotrichosis have been reported in America, but in France the disease is unusually prevalent. Practically all of the cases have followed infection through an open wound, but an external lesion is not essential.

Neuralgias and Functional Disturbances Arising from Infections in and About the Tonsil. F. C. TODD, Mineapolis, *Journal American Medical Association*, August 27, 1910.

Todd emphasizes the following points: 1. Pain and soreness in the neck in the region of the tonsils usually arise from diseased tonsils. 2. Neuralgias in the region of the tonsil, ear, side of head, neck, nose, teeth, gums, or antrum of Highmore, may be and frequently are caused by diseased tonsils. 3. Disturbances of function through pressure on or inflammation of nerves may manifest itself in hoarseness, in loss of voice, cough, difficult deglutition, or entrance of food into trachea, with regurgitation, or in defects in hearing, dyspepsia and disturbed heart action. 4. Such diseased tonsils may not be and usually are not large or acutely inflamed. They must be carefully examined by the surgeon, who should pull them into view with a dull hook, determine whether the crypts contain detritus, whether the tonsils are sore to such manipulation, bleed easily, or otherwise give evidence of being diseased. 5. Such tonsils should be carefully and completely removed. 6. Relief of secondary infections usually follows immediately on removal, but, sometimes, only slowly, if neuritis or secondary glandular involvement is present. 7. In certain cases paralysis may be permanent.

A New Method of Closure of the Intestine. (*Eine Neue Methode des Operativen Darmverschlusses.*) R. KLAPP, Berlin. *Deutsche Zeitschrift für Chirurgie*, July, 1910.

On the cadaver and in several cases of intestinal and pyloric resection in the living human being this new method of closing the lumen of the bowel has been found of easy application. The divided end of the bowel is crushed, this portion of the bowel is then grasped with a narrow-bladed clamp (the author employs the clamp devised by Moskowicz for his aseptic intestinal anastomosis). The clamp is rolled backwards along the axis of the bowel. In this manner bowel serosa is brought in contact with bowel serosa. The rotation should at least be one of 180°. The serosa of the intestine rolled up on the clamp should be sutured to the adjoining serosa of the non-rolled portion of the intestine. An additional suture is placed through the mesentery.

Extramammary Paget's Disease. M. B. HARTZELL, Philadelphia. *The Journal of Cutaneous Diseases*, August, 1910.

Not long after Paget's description of the "disease of the mammary areola preceding cancer of the mammary gland" isolated cases were described in other regions of the body, cases apparently identical clinically and histologically with Paget's disease of the nipple. Hartzell reports an additional case occurring on the forearm: The patient, a man of 64, presented a lesion the size of a man's palm, circumscribed, of bright red color. It was for the most part smooth, but was scaly in spots and in several places eroded. The erosions were covered with brownish crusts. In the upper part of the patch there was a superficial ulcer, with infiltrated border, and covered by exuberant granulation tissue.

The disease had lasted 15 years. The subjective symptoms were trifling. With *X*-ray treatment there has been rapid improvement. Microscopical examination of specimens removed from different parts of the skin lesion showed in places the typical picture as seen in Paget's disease of the nipple, and, in that section removed from the edge of the ulcer, the picture of a "naevo-carcinoma."

A Case of Plumbism Treated by the Formation of a Fixation Abscess. (*Sur un Cas d'Intoxication Saturnine Traité par l'Abscès de Fixation.*) VANHAECKE AND LECLERCQ. *L'Echo Médicale du Nord*, July 31, 1910.

The patient was suffering from plumbism complicated by a lead encephalopathy. Despite vigorous treatment the symptoms were steadily progressive. Peripheral motor neuritis developed. Two cubic centimeters of turpentine were subcutaneously injected. There was a febrile reaction and an abscess formed. Eight days after the injection distinct improvement was already to be observed, especially of the cerebral symptoms. Two months after the injection the patient was discharged, practically well.

A New Tuberculin. (*Ein Neues Tuberculin.*) F. J. ROSENBACH, Goettingen. *Deutsche Medizinische Wochenschrift*, August 18 and August 25, 1910.

This tuberculin is the result of growing a fungus (trichophyton holosericum album) on a culture of living tubercle bacilli. The trichophyton grows very luxuriantly on this culture medium and the tuberculin resulting from the biochemical interaction is employed without being heated. Its effect on both man and lower animals is quite different from that of any of the other tuberculins. This depends upon the fact that the preparation does not require warming (no interference with immune substances) and, further, that the poisonous by-products of the growth of the tubercle bacillus are destroyed by the action of the trichophyton.

Rosenbach has employed his tuberculin for its local as well as for its general effect. In the latter instance a group of pulmonary and other forms of non-surgical tuberculosis was treated. Here the application is by subcutaneous injections just as in the other forms of tuberculin. Following the injection there is leucocytitic infiltration of the tuberculous tissue followed by exudate formation and, later, absorption. The tuberculous focus thus degenerates in a typical instance, and heals. When the focus is caseous, however, suppuration may result and, even here, if the purulent material has a path of egress, cure may result.

For surgical tuberculosis—lupus and other cutaneous tuberculides, bone and tendon diseases, etc.—Rosenbach's tuberculin is locally injected into the lesion. Approximately the same reaction occurs as above described, but it is much more intense. Even acute phlegmonous areas may appear which, however, disappear spontaneously. In the presence of caseation, tuberculous granulations, etc., abscesses may form, spontaneously rupturing and being followed by healing.

It is expressly stated by the author that one must wait for a considerable period of time before declaring his tuberculin a curative agent. At present he is only willing to state that the temporary results are excellent, far better than the results with the other forms of tuberculin.

Appendicostomy and Cecostomy in the Treatment of Chronic Dysentery. WALTER D. WEBB, *The Postgraduate*, August, 1910.

Appendicostomy is preferable to cecostomy and should always be the chosen method unless there is some obstacle to its performance. Thirty-one cases are reported of chronic amebic dysentery, chronic colitis, following acute dysentery. The oldest case had existed eleven years. Appendicostomy followed by irrigations gave satisfactory improvement in the symptoms but did not suffice to produce cures. In the amebic cases the parasites rapidlly disappeared. In five cases cecostomy was performed. The openings must not be allowed to close or the dysentery returns. Weakening of the abdominal walls with the formation of ventral hernia occurred in 8, or 25 per cent. of the cases.